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Original Articles

The Differentiation of Sprain-fractures and Congenital Anomalies

BY J. TORRANCE RUGH, M.D.

Professor of Orthopedic Surgery in the Jefferson Medical College of Philadelphia

After a careful summing up of a series of experiences extending over a period of seven or eight years, the writer has been impressed with the large margin for error which is present in the diagnosis of so-called "sprain-fractures," especially when these are located in the hands or feet. Numerous articles have been written regarding the recognition of sprain-fractures, of their extent, their most frequent locations, and of the disability which results from the failure to recognize them. Ross and Wilbert (*American Medicine,* Jan. 5, 1902) called attention to the importance of the *x*-rays in the differentiation between sprains and sprain-fractures, and again, in 1912, Ross and Dwight (*Annals of Surgery,* October, 1912) published a study of sprain-fracture in connection with dislocation. Many other writers have also drawn attention to the frequency of occurrence of this type of fracture, complicating what was formerly considered a rather severe sprain, and have emphasized the seriousness of the consequences, when the condition has remained unrecognized and therefore improperly treated.

It is the experience of every surgeon that in the onset of a disabling process, the layman, in trying to arrive at the cause of the condition, will constantly turn to injury, whether mild or severe, as the exciting and determining factor. The wisdom and the importance of this must always depend upon the clinical judgment and experience of the surgeon, as there is no doubt that the relationship between the trauma and the results is ofttimes misconstrued. One frequently sees a case of a slight injury in which there is present some anatomic variation or anomaly. This has caused no functional or other disturbance, until some slight strain of function or of position is centered upon it, and by reason of this unusual influence there has resulted pain or disability, and yet in such a condition one should not really ascribe the disability to the injury. This is commonly seen in conditions of the lower spine, where anomalies are present in a very large percentage of individuals, but of whose presence there is no consciousness, until strain of function, posture or other factor occurs and backache results. The importance, therefore, of an intimate knowledge of the common forms of congenital anomalies, deviations and malformations in the various parts of the body becomes apparent in the consideration of as common and apparently as simple a problem as a "sprain-fracture."

When in 1907 Dwight published his "Atlas of Variations of the Bones of the Hand and Foot," he drew attention to conditions which had not previously been

recognized as of any significance, other than anatomic curiosities. Nor did he fully realize at the time the importance, clinically and medicolegally, of his own observations. This is the phase of the problem of "sprain-fractures" which I wish to stress in this brief article.

Every surgeon recognizes the occurrence of "sprain-fractures," and in certain locations the diagnosis is relatively easy. For instance, a patient makes a misstep or treads upon an unstable object and the foot is violently turned to the inner or outer side. There is severe pain, swelling, hemorrhage and tenderness at the point of either malleolus. An immediate careful examination may reveal crepitation at that spot, which will at once certify the diagnosis of a sprain-fracture. Or, if an *x*-ray examination is had, it will, if made at a proper angle, show that a small layer of bone has been torn off at the point of ligamentous attachment.

Again, if dislocation of a part occurs, either with or without immediate reposition, an *x*-ray may reveal a sprain-fracture in the neighborhood of the joint, and in this type of injury the ultimate recovery will be greatly prolonged over those which occur without the tearing loose of the bony parts. On the other hand, it frequently occurs that a foot or a wrist or the lower back has been wrenched or twisted, and the examining surgeon has made a diagnosis of acute sprain and has instituted treatment. If an *x*-ray of the part is made it may discover a supernumerary bone or a discission of the bony parts, which may simulate a fracture, but which is in reality a congenital anomaly. The following cases will illustrate this condition:

In Camp Wadsworth, South Carolina, in the fall of 1918, I was asked to see a man complaining of trouble with his foot, which had incapacitated him for drill and other training. The orthopedic surgeon had had the foot *x*-rayed and had received the report that there was a fracture of the inner edge of the scaphoid and a sprain-fracture of the posterior edge of the astragalus. Examination of the foot did not show any thickening of the part nor any special tenderness directly over the points of the fractures, though there was tenderness along the course of the tibial muscles. The foot was markedly abducted and there was a large prominence internal to the scaphoid and head of the astragalus. An examination of the *x*-ray plates of the foot was then made and there was found a supernumerary tarsal bone (tibiale externum) at the inner edge of the scaphoid and an os trigonum at the posterior portion of the astragalus. When the attention of the radiologist was called to these supernumeraries, he admitted never having heard of their existence. There is no doubt their presence in the foot had rendered this part more vulnerable than normally, and therefore, under the influence of the training and intense work in the camp, the foot broke down. Proper balancing of the shoe, with carefully directed exercises, promptly restored the individual to efficiency.

In the summer of 1921 I was asked to examine a man whose back had been injured in a large industrial establishment near Philadelphia and who complained of almost constant pain in the region of the fifth lumbar and first sacral segment of the spine. An *x*-ray had been made, and the report of the radiologist and of the surgeon was that there was a fracture of the spine, involving the first sacral segment. Careful clinical examination failed to show any evidence of displacement, thickening, or other signs of fracture, beyond refusal of the patient to bend equally freely in all directions. Inspection of the *x*-ray showed an occult spina bifida in the posterior arch of the first sacral segment. There was no spinous process and the ends of the laminæ did not approximate and were rounded and smooth, instead of square-edged and irregular. The case, therefore, was one in which a congenital anomaly provided an area more susceptible to injury (a weak link in the chain), and the strain of occupation resulted in disability, which, according to the law, was compensable.

A sprain-fracture in the wrist is likewise a not uncommon error to the uninformed.

Dwight has detailed variations in the carpal bones, which may readily be mistaken for fractures. A medicolegal case of this character occurred in the writer's experience in 1920. A young woman had sustained a Colles' fracture of the wrist and developed a Volkmann's ischemic contracture within forty-eight hours, as a result of the injury to the tissues about the elbow at the time. An *x*-ray made later showed, in addition to the fractured radius, what appeared to be a fracture of the styloid process of the ulna, with separation of the fragment. Action at law was brought against the surgeon for neglect and failure to recognize and treat the styloid fracture. A misinformed "expert" testified for the plaintiff that the fracture of the styloid was an important condition and should have been discovered in the first *x*-rays that were made. The writer was able to show that the condition was not a separated styloid process but was a supernumerary carpal (os triangulare), as the styloid was intact and the point was rounded instead of irregular. The case resulted in a nonsuit.

Similar anomalies are found in various parts of the carpal and metacarpal areas and in the sesamoids of the thumb.

In the foot is found a greater number of these supernumerary bones than in any other portion of the body. The most common ones are located at the inner edge of the scaphoid (tibiale externum), at the posterior edge of the astragalus (os trigonum), and at the base of the fifth metatarsal (os Vesalianum). Less frequently a secondary os calcis lies between the head of the astragalus and the anterosuperior portion of the os calcis, an intercuneiform between the internal and middle cuneiforms, the intermetatarseum between the bases of the first and second metatarsals, the peroneum, the sesamoid in the tendon of the peroneus longus, just beneath the cuboid, and an extra phalanx is found at the tip of the little toe.

Variations in the sesamoids in the tendon of the plantar flexor of the great toe are also often translated as fractures. The usual number is two, but it is not uncommon to find three and four present with marked lines of separation between. Such cases may have had an injury and may be easily mistaken for fractures, but clear plates will show that the lines of cleavage are smooth and without any evidences of the serrations of a fracture. One must, therefore, be upon his guard in diagnosing a fracture in certain portions of the body, especially from the medicolegal standpoint, and the reader of a skiagram should be familiar with the anatomic variations in the various parts.

Pinworm Infection in Man and Its Treatment

BY MAURICE C. HALL, PH.D., D.V.M.
Bureau of Animal Industry, U. S. Dept. of Agriculture

Although some writers report success with various treatments for pinworms, there are so many reports of unsatisfactory results, sometimes with treatments reported as satisfactory by other writers, that it is not clear that any treatment can yet be regarded as established as entirely satisfactory. Treatment must take into consideration the known habits and life history of the worm. Unfortunately, there is some disagreement in regard to the habits and life history.

It is generally stated that infection results from swallowing infective worm eggs, the eggs hatching in the digestive tract and the young worms developing to mature worms in the small intestine; that after the female worms are fertilized, these

gravid females pass to the large intestine and may either leave the body in the feces or may migrate from the rectum to the anus and wander into the anal cleft, the genitocrural folds, and neighboring regions. According to Leiper, when these gravid females are exposed to the air there is a definite physiological reaction in the form of rhythmical contractions of the vaginal wall which results in the expulsion of the eggs, these being left behind on the skin in the trail of the worm. It is well known that pinworm eggs are rarely found in the feces.

The female worms come away periodically and may not be present when looked for. Brüning (1916) recommends that feces collected by swabbing the anal margin be examined for eggs. According to Leiper, Mrs. Philpot has found that acid and trypsin ferment will dissolve the operculum of this egg—described as a porose area by Cobb (1890)—and destroy the larva, which is in an early stage of development (the so-called "tadpole" stage). He is, therefore, of the opinion that the egg is infective only at a later period of development, when the embryo worm has assumed the nematode shape and is more resistant to the gastric juices. Cobb (1890), however, was unable to hatch eggs with digestive fluids *in vitro,* but eggs swallowed in a special type of capsule which permitted the entrance of these fluids were found to be hatched on the recovery of the capsule from the feces, and the larvæ found alive and active in the case of "tadpole" larvæ or later stages.

There appears to be a lack of definite observations showing that the eggs hatch outside of the body of the host, and it appears that infection usually results from swallowing eggs containing embryos which have reached the advanced stage of development noted above. The observations reported by Cobb and by Leiper give conflicting evidence as to the possibility of infection from eggs with "tadpole" embryos.

While the above represents the generally accepted view as to the life history and habits of the worm, a number of writers, such as Vix, Küchenmeister, Trumpp, Goebel, Rodenwaldt and Roeckemann, and Heubner, have reported the simultaneous finding of eggs, larvæ and adults in the intestine, or the existence of pinworm larvæ in fresh feces, or a six- to seven-week periodicity in the passage of females, under circumstances which incline them to the opinion that eggs may hatch in the intestine after deposition there by the female worm and without passing out of the patient. If this should prove to be the case it would follow that an existing infection might increase in this way in spite of all precautions to prevent it. Cobb (1890) has summarized the objections to this theory. At present this point may be left for further investigation.

Disregarding the possibility of such infection from eggs hatching in the digestive tract without having previously left the body, treatment may be directed against the mature worms in the small intestine, against the gravid females in the large intestine, and against the female worms and eggs in the anal cleft and adjoining regions. Many treatments take cognizance of only one or two of these things, but it appears likely that treatments taking cognizance of all of them are more likely to result in cure in a reasonable length of time than those which disregard one or two of these features.

For the removal of the mature worms from the small intestine, the various anthelmintics used to remove nematodes may be employed. Santonin has been used by many physicians. Brüning (1916) mentions santonin, 0.025 gm., two to three times daily, as one of the drugs that may be used for this purpose. Matsuoka (1917) notes that according to most writers santonin is very effective for removing pinworms.

Chenopodium has also been used to remove pinworms, and Rose (1917) in the report of the International Health Board says: "Practically all reports agree that oil of chenopodium. . . . is more active than

thymol in the treatment of infection with Oxyuris." Brüning (1916) reports favorably on this drug.

Thymol has been reported by Lutz (1888) as often effective against pinworms and has been more or less used for removing them. Perrin and Théry (1919) give thymol in three doses of 0.75 to 1 gramme at one-hour intervals, followed an hour after the last dose by a Seidlitz powder. As noted above, Rose reports chenopodium as more effective.

Naphthalin has been used for removing pinworms by Brüning (1916), the dose being 0.1 to 0.3 gramme, administered three times daily for several days. According to Ungar (1920), this drug is of little value against worms other than pinworms. For adults he gives not over 0.5 gramme, not over 2 grammes a day, and does not give this treatment for over four days. He notes severe toxic symptoms in a young woman receiving three doses of 1.2 grammes for two and a half days.

In the German medical literature there are many favorable reports on aluminum compounds or proprietary preparations containing these compounds. Brüning (1916) reports favorably on aluminum subacetate, and notes good results from a proprietary preparation containing this. Kjerrulf (1919) calls attention to Dreuw's use of basic aluminum acetate and reports favorably on his own experience with it for eight years. He gives it to adults in doses of 1 gramme t. i. d., mixed with senna, sulphur, and the compound licorice powder of the Swedish Pharmacopœia, repeating treatment for four to five days. Loeper (1920), according to an English review, reports excellent results with bismuth carbonate; as the bismuth carbonate of English medical practice is the bismuth subcarbonate of the U. S. P., presumably the subcarbonate is referred to here. The minimum dose for adults is 10 grammes daily in two doses; for seven-year-old children, 4 grammes daily; for younger children, 2 to 3 grammes daily. He has observed no toxic effects from this. He surmises that bismuth subnitrate might be as effective, but notes that it is occasionally toxic. A proprietary preparation formed by the action of benzoic acid on basic aluminum acetate has been reported on favorably by Kaufmann (1920), Rahner (1920), and others. Rahner has treated 200 cases with cures in a week in all cases.

Another German proprietary, reported on favorably by Franke (1920) and Schickhardt (1920), is a caraminacidester of paraoxydiphenylmethane.

McVail (1922) and Lambert (1922) report that carbon tetrachloride will remove pinworms, and Nicholls and Hampton (1922) report the passage of 4945 pinworms by 64 patients after carbon tetrachloride. The findings of Leach (1922) and Docherty and Burgess (1922), in cases in which this drug was used on condemned prisoners who were subsequently examined post mortem, do not indicate that the drug has a dependable action on these worms. Leach reports the case of one criminal who passed 67 pinworms after treatment, but had 3492 pinworms post mortem. Docherty and Burgess report that during the first twenty-four hours after treatment one prisoner passed one pinworm, the second passed 98 pinworms, and the third had no bowel movement during this time. The prisoners were hanged one to two weeks later, and on post-mortem examination the first was found to have no pinworms, the second 17 pinworms, and the third 14 pinworms. Lacking evidence in regard to worms passed after the first twenty-four hours, we cannot make definite statements in regard to the exact efficacy of the drug, but it was not entirely effective. However, few drugs prove entirely effective in a series of cases when checked by post-mortem examination.

Other drugs which have been given by mouth to remove pinworms are turpentine (one case was reported to the writer in which a mother claimed to have removed pinworms from a three-year-old child by means of 3 drops of turpentine) and male-fern (Lutz, 1888, and Brüning, 1916).

The foregoing treatments are designed to remove pinworms from the small intestine and to some extent from the large intestine. However, the absorption of anthelmintics in the digestive tract diminishes the likelihood of their removing worms from the large intestine, as Bremser, quoted by Lutz (1888), noted. The removal of the gravid females from the large intestine is accomplished to some extent by purgatives, such as salts or calomel, and to some extent by the use of enemata. It is unlikely that enemata are effective against worms which are high up in the large intestine, and, as Matsuoka notes, pinworms in the appendix, especially those which have penetrated the mucosa, may be regarded as safe from attack in this way.

A large number of substances have been used as enemata. Lutz (1888) is somewhat skeptical of most of these since he gets about the same results from cold water alone that he does from more elaborate preparations. He recommends that fecal masses be removed by purgation or by the use of a warm water enema, and that the cold water be then injected and retained a short time, suggesting that this be done daily a short time before the hour when the pinworms usually migrate out. Migration appears to occur in the evening as a rule. Water is destructive to pinworm eggs, according to Rahner, and probably injures the adult worms by a destructive osmotic action. Lutz also reports good results from the use of male-fern or thymol in clysters.

Brüning (1916) recommends the use of sodium chloride solution, or vinegar solution, 1 of vinegar to 3 or 4 of water; or acetic acid, 1 per cent; or of a mixture made by cooking 3 or 4 onions in a liter of water; or of 15 to 25 drops of oil of chenopodium shaken up in a liter of water.

Perrin and Théry (1919) advocate the use of sodium chloride solution, one soupspoonful of salt to one glass of water, to be used daily for ten consecutive days.

Other enemata which have been recommended are phenol and glycerin, of each 5 to 10 minims, in one pint of water; corrosive sublimate solution, 1:10,000; benzol, 10 minims, emulsified in one ounce of egg-yolk and two ounces of water; quassia, one ounce, steeped in one pint of hot water; or solutions of lime water or formaldehyde. In this connection it should be said that some of these preparations, such as those containing phenol, should be used with great caution, owing to the danger of poisoning.

It is generally believed that female pinworms or their eggs in the anal region are responsible for the anal pruritus which is often present in pinworm infestations, and that scratching the affected parts to alleviate the itching results in eggs adhering to the hands and especially under the finger-nails, these eggs being subsequently conveyed to the mouth on the hands or in contaminated food or drink. Pinworm larvæ have been found in the nose, and may have originated in eggs conveyed to the nose on the fingers. It is also believed that the worms and eggs from the anal region soil the underwear and bedding and are conveyed from these objects to persons handling them. In view of these facts, it appears necessary to take measures to control this source of infection.

The use of an anal wash or ointment serves to destroy worms and eggs, to prevent their distribution to underwear and bedding, and to alleviate itching and make the transfer of the infective material to the hands and mouth less likely. Among the things used for these purposes are: The official unguentum phenolis (a 3-per-cent phenol ointment); unguentum hydrargyri; 1:10,000 bichloride solution; silver nitrate ointment; a camphor, thymol and quinine ointment; or a paradichlorbenzol ointment. Landgraf (1922) states that he and his father have had excellent results in their practice from the use of a suppository the size of the little finger, composed of unsalted lard mixed with 0.5 gramme unguentum hydrargyri (unguentum hydrargyri cinereum P. G.), or, in the case of children, with unguentum hydrargyri

ammoniati (unguentum hydrargyri album G. P.). This is used for two to three successive nights. He reports that this cured a case of pinworm infestation which had resisted treatment of various sorts for over a year.

Additional measures which are regarded as of value in treating pinworm infestation are: Rigid cleanliness, especially as regards washing the hands and cleaning the fingernails; a preliminary thorough cleansing of the anal region after defecation, followed by the application of anal ointment; caution in handling the underwear, nightclothes, and bedding of infested persons, and sterilization of such underwear, nightclothes and bedding by a suitable laundering process; the use of nightclothes which will prevent contamination of the fingers by scratching during sleep, a measure of especial importance in the case of children, and which will prevent contamination of the bedding with its attendant risk of contamination of the hands during sleep; and the use of a separate bed by infested persons to prevent the spread of the infection. Stettiner (1912) reports that he had treated one patient for years with never more than transient benefit until the patient developed diabetes and carbohydrates were excluded from the diet, the pinworms disappearing after the change in diet. Following this he has adopted the practice of ordering an antidiabetic diet as an adjuvant to the usual measures against pinworms, and reports the prompt cure of four patients under these conditions. In his opinion this diet is indicated as part of the treatment for pinworms. It is of interest to note that long before this, Lutz (1888) advised the use of a diet which would give the smallest possible amount of residue after digestion in the treatment of pinworm infestation.

Some of the complications present in pinworm infestation may be briefly noted. Hildebrand reports that one patient with an obstinate infestation recovered after an operation for hemorrhoids, the cure being perhaps associated with the greater cleanliness possible after the operation. It is also possible that a pathological condition of the intestinal mucosa favors pinworm infestation. Klu reports a gravid female pinworm in the necrotic tissue in a cancer of the cervix in a woman fifty-nine years old.

Pinworms are often responsible for very unpleasant symptoms other than pruritus ani. The worms may travel to the vulva, causing pruritus vulvæ, the resultant irritation sometimes leading to masturbation. Polyuria has been reported as a symptom, this condition disappearing after successful treatment for pinworms. Itching is more intense at night and may result in serious loss of sleep and of nervous energy. Associated with these things are disturbances of appetite and of nutrition, resulting at times in anemia and emaciation. In some cases there are nervous disturbances, and, in rare cases, convulsions, these unusual conditions being apparently more common in children. The worms have been regarded as the cause of a verminous appendicitis, and Rheindorf regards them as often responsible for chronic pains in the region of the appendix. Roll has reported pinworms as the cause of a fatal ileus. According to Matsuoka (1917), when pinworms enter the tissues they do so very slowly, separating the tissues and entering with very little damage to the tissue invaded, and he states that the edge of the wound is generally organized and in a condition to hinder the advance of bacteria. According to some writers, pinworms do not invade the mucosa, and the reports to the effect that they do are based on artefacts or errors of observation.

The diagnosis of pinworm infestation must be made, as a rule, on the clinical picture and on the finding of the gravid females. Eggs are rarely found in the feces, but the examination of fecal material swabbed from the anal region, as suggested by Brüning, is a promising method, judging from what we know of the worm and from the standing of this eminent worker. Brüning (1916) also reports that von Trumpp has devised a skin reaction test

for oxyuriasis, the test consisting of rubbing in an ointment composed of vaselin and pinworms with the subsequent development of a marked erythema in infested individuals.

In passing it may be of interest to note that in the field of veterinary medicine pinworms are of interest only in the case of the horse. In this animal these worms cause anal pruritus much as they do in human beings and for the same reason. This pruritus results in rubbing, and infested animals commonly have the hair rubbed from the base of the tail. A treatment which has been found entirely satisfactory consists in the administration of 4 or 5 drachms of oil of chenopodium, followed immediately by a quart of raw linseed oil. Rectal enemata are sometimes used, but with results inferior to those obtained by the use of oral medication. The human pinworm is often reported as occurring in dogs, but there appears to be no basis for these reports, and the pinworm, *Oxyuris compar* Leidy, reported once from the cat in this country, and once, doubtfully, from the cat in India (Baylis and Daubney, 1922), appears to be the common pinworm, *O. ambigua*, of rabbits in Leidy's case. Rabbits, hares and various rodents are infested with pinworms, but these are of little known economic interest.

In the Days of Polypharmacy

BY JOHN CHALMERS DaCOSTA, M.D., LL.D.

Gross Professor of Surgery and Clinical Surgery in the Jefferson Medical College, Philadelphia

I find in my library a book called "A Physical Vade Mecum" written under the pseudonym of Theophilus Philanthropos. This book contains the dispensatory of St. Thomas's Hospital for 1741, and also the dispensatories of St. Bartholomew's and Guy's Hospitals for the same period. It was printed in London by E. Duncomb in Duck Lane, Little Britain, in 1741.

All of us who have been to London will remember the semi-isolated buildings of brick which constitute the present St. Thomas's Hospital. St. Thomas's Hospital moved to its present situation about 1868. At the period with which our book deals it was in Southwark. It had been founded in the thirteenth century as an almshouse, and at the time of the dissolution of the monasteries the City of London purchased it. King Edward the Sixth caused it to have a new foundation. At the present time we see in front of the hospital a statue of Edward the Sixth, which was erected originally in 1737 in the yard of the hospital.

Guy's Hospital, founded in 1723, is in Southwark on the left-hand side of the Borough High Street. It was founded by Thomas Guy, who had a book-store in Lombard Street. He had been engaged to be married to Sally, his housemaid, but a quarrel broke off the engagement. He remained a bachelor, and as a result left over $1,000,000 to found the hospital. There is a statue of him in front of the hospital and also one in the chapel. Those who have read Chaucer may remember the High Street in the Borough as the road of the Pilgrims of Canterbury. The readers of Pickwick will recall that that eminent character, Mr. Robert Sawyer, lived in Lant Street, convenient because adjacent to Guy's Hospital. Right near Guy's Hospital stood until recently, and perhaps still stands, the White Hart Tavern which Shakespeare refers to in his Henry the Sixth, putting the words about it in the mouth of Jack Cade.

St. Bartholomew's, the oldest hospital in London, was founded by Rahere early in

the twelfth century. On the dissolution of the monasteries Henry the Eighth refounded it. One reaches it by way of Smithfield, and just inside of its gates is the ancient church of St. Bartholomew the Less. In this building is a tablet to the surgeon John Frake, the likeness of whom will be seen in Hogarth's cut. He is the man shown in charge of the dissection in "Stages of Cruelty." This great hospital treats over 100,000 patients a year. The above statements of a historical sort are derived largely from that well-known book "Walks in London" by Augustus J. C. Hare.

The description of St. Thomas's Hospital in our book is extremely interesting; the author making much of the religious needs of the inmates and the methods in vogue for meeting them. The author entered St. Thomas's as physician's pupil on the 2d of March, 1738. He studied the practice of physic under Doctor Wilmot. He was much grieved of all he "observed committed" in the institution, but by complaining to the authorities he was able to have enormities removed and to bring about the observation of "order and decency." He tells us that the building stood just by London Bridge in Southwark in the County of Surrey.

The three wards on the north side were "erected at the charge of Thomas Guy, Esquire, citizen and stationer of London," one of the governors of the hospital in 1707, so it would seem that Guy was deeply interested in hospitals during his active life.

The list of governors contains a very large number of names. The Lord Mayor of London was one of them. Among others we may mention:

Sir John Salter; Robert Wilmot; Mr. Thomas Bray of Spitalfields; Dr. Thomas Crow of Throgmorton Street; Mr. Thomas Chitty of Thames Street; William Cheselden, Esquire, of Chelsea Hospital (the eminent surgeon); Mr. Josiah Chitty of Mary's Hill; His Grace the Duke of Devonshire; Dr. James Douglas of Red Lion Square; Sir Thomas Drury; The Rt. Hon. Lord Philip Hardwick, Lord Chancellor of Great Britain; Robert Lant, Esquire, of Southwark (after whose family Lant Street possibly was named); Dr. Richard Mead of Ormond Street (the successor of Radcliffe in London eminence); His Grace the Duke of Newcastle (the celebrated politician and office broker); The Rt. Hon. Arthur Onslow, Esquire (Speaker of the House of Commons); Dr. Henry Plumptree of Bow Lane; The Rt. Hon. Henry Pelham, Esquire, of Whitehall (who in two years was to become prime minister); Mr. William Pepys of Lombard Street (probably a descendant of one of the family of the celebrated diarist, Samuel); His Grace the Duke of Richmond; Sir Hans Sloane (the advocate of inoculation for smallpox, the first physician to be made a baronet, and whose museum and library formed the nucleus of the British Museum); Charles Selwyn, Esquire, of Scotland Yard; Peter Theobalds, Esquire, of Blanksfield, Southwark (not Pope's Theobald, immortalized in the Dunciad—his first name was Lewis); Ralph Thrale, Esquire, of Southwark (not Dr. Johnson's brewer, he was Henry Thrale); Joseph Tunston of the Strand; and The Rt. Hon. Sir Robert Walpole (the great political leader). It is interesting to recall that some of the prescriptions recommended in this book were used and believed in in the days of Sir Hans Sloane, of Robert Mead, of Sir Robert Walpole of Cheselden, and of Lord Chancellor Hardwick.

Seventeen hundred and forty-one! King George II. was then ruling England, and Queen Caroline had, because of death, ceased ruling King George four years before. Benjamin Franklin, living in Philadelphia, was thirty-five years old and was soon to begin those experiments which were to help make his name immortal. Samuel Johnson, thirty-two years of age, had been in London for four years, was living in poverty and was working for Cave, the owner of "The Gentleman's Magazine." In 1738 he had written "London" in imitation of the 3d Satire of Juvenal. George

Washington was nine years of age. Alexander Pope, fifty-three years of age, was at the head of English literature and had but three years more to live. Dr. Jonathan Swift was to have four years of miserable life remaining. John Gay, who had written "The Beggars' Opera" fifteen years before, had been dead for nine years. Sir Isaac Newton had died in 1727. The "Principia" was fifty-six years old. Dr. John Arbuthnot, the author of the History of John Bull, had been dead for six years. Horace Walpole, son of Sir Robert, was living at Strawberry Hill near Twickenham. Sir Robert Walpole, after his long and bitter parliamentary duel with Poulteney, was to resign office in 1742, and be made the Earl of Orford, on a pension of £4000 a year, a promotion which he stated meant being "kicked upstairs." William Cheselden, the great surgeon, who had perfected the lateral operation for stone in the bladder and who was able to perform it in a little over fifty seconds, was fifty-three years of age. He had been surgeon to St. Thomas's Hospital as long ago as 1718. Samuel Pepys, diarist, had died in 1703. His famous diary was lying, boxed up and entirely unknown, in the library of Magdalen College, Cambridge, and was not to be disclosed to the world until 1825. John Radcliffe, the celebrated physician, had been dead for twelve years. Oliver Goldsmith was thirteen years old and was living in Ireland. Laurence Sterne, the clergyman, held a living at Sutton, Yorkshire, and the world was to wait for eighteen years for "Tristram Shandy." William Blackstone was studying at Pembroke Hall, Oxford. Hogarth was at the height of his fame. Halley, the celebrated astronomer, was to die in 1742. All medical lectures were delivered in Latin, and the world was to wait for sixteen years before Cullen of Edinborough was to establish a series of lectures in the English language.

It is interesting to note that all of the persons mentioned, when sick, must have been treated by prescriptions like those set forth in this article. Bloodletting and drastic cathartics were regarded as panaceas for many diseases. When we come to read of the usual doses of purgatives we will understand why a gentleman who took a purgative had to seclude himself for a couple of days. For a confirmation of this statement see Pepys' diary.

Out of the large number of managers thirty were chosen as a committee to manage the hospital actively. There were three attending physicians, Dr. Wilmot, Dr. Hall, and Dr. Letherl ("gentlemen of sedate and steady behaviour well-known to the comfort of many for their excellent skill in physic").

Dr. Wilmot resigned in 1740 and Dr. Reeve was chosen in his place. There were three surgeons, Mr. Fern, Mr. Girl, and Mr. Baker. Mr. Fern is referred to as "The most judicious Mr. Fern." He died in 1741 and Mr. Paul was chosen in his place. Mr. Girl is called the "Ingenious Mr. Girl," and Mr. Baker lags far behind the other two as "The good-natured Mr. Baker." This is a compliment like calling a man "good-hearted" as the best that can be said of him.

The book then describes the way of admitting patients, the days and times for admission, and a great many other facts about the management of the hospital.

There was an extensive out-patient service as well as the service for those sick in bed. It is interesting to know that in the foul wards salivation was practiced as the treatment for syphilis. The clean patients were obliged to pay "sixpence for necessaries and fifteenpence a month for washing if they did not otherwise provide for themselves," and patients of "The foul wards have five shillings and threepence to pay for their 'flannen' and washing during their salivation." (The word "flannen" probably means flannel. There is no such word as "flannen" in the first edition of Johnson's Dictionary.)

During the winter half of the year each ward was allowed six sacks of coal a week and three candles of a night, and during the summer season two

and a half sacks of coal a week and two candles of a night. On Sundays, Mondays and Thursdays, each patient was allowed "half a pound of beef, a small loaf of bread, and three pints of small beer;" a concession which would have horrified the American uplifter of to-day. Tuesdays and Saturdays each patient was allowed six ounces of butter or eight ounces of cheese, whichever they chose, and the same quantity of bread as previously stated. On Wednesday every patient had a half pound of mutton and the same quantity of bread as quoted above. On Friday each patient was allowed porridge ("a sufficient mess") with a loaf of bread and "twopence" in money. A patient on milk diet was allowed three pints a day and as much salt and oatmeal as was necessary. To those whose condition forbade the use of house food a groat (fourpence) a day was given in order that they might buy what food they desired. The ward under description had twenty-five beds. Mercury for salivation usually was given by inunction. Patients were usually prepared for salivation by warm baths and physic. The patients who were being salivated were given no solid food at all but were restricted to liquids; for instance, water, gruel, and milk porridge, with plenty of beer. Such a patient was allowed a pint of beer an hour during the day and half a pint an hour during the night. The beer was drunk warm, and the victim was protected from cold in order to obtain "a good flux." The flux was kept up for one month with a total disregard of gums, teeth, bowels, bones, and strength. Sometimes the flux was repeated, and perhaps even a third time in order to obtain "a cure." (It is no wonder that maxillary necrosis was such a common malady in the eighteenth century!) A bell was rung when food was to be served and when beer was to be given out, and patients who were able were obliged to go to the kitchen for their own food and drink, bringing it with them in their "leathern jacks." At three o'clock a bell was rung calling all patients able to come to chapel. At eight o'clock in the winter-time and at nine in the summer-time the ringing of a bell warned patients to bed.

An inexorable rule of the hospital, and it seems to us a very sound one, was as follows: "No money or presents are to be received from the patients or their friends upon any pretence whatsoever." The rule goes on to say "this is by way of prudent prevention, and to preserve the patients from the insults and impositions of those in whose heart dwells the deadly canker of coveteousnss or the criminal love of money; and who, thus affected, would otherwise doubtless not fail of ravening upon other patients, and with eager thirst devour whatever was contained in their pockets; and by being disappointed thereby of what they might hope to obtain, would not fail to make the patient severely suffer in other respects." When it was proved that somebody had violated this rule they were "soon displaced and others put in their room." We find from the report that the hospital had 446 beds; the beds of children sometimes being double. There was no provision for hopeless cases. The rule was that nobody should be taken into the house twice except he had some new disease or was very likely to be cured. No incurable case was to be admitted under any circumstances. No person who entered should be obliged to pay any "money or gratuity for garnish or footing." The surgeons were obliged to complete their dressings before ten o'clock in the morning in the winter and before nine in the summer, and no dressings were to be made in the evening "unless upon extraordinary occasions to be allowed by Mr. Treasurer." That seems to mean that the Treasurer passed upon the necessity for such dressings.

Every Monday, Thursday and Saturday the doctors and surgeons held a meeting at 10 A.M., to take care of the poor in the dispensary, and every Saturday they went together through the wards, consulting about those cases which were "extraordinary and difficult" and to decide whether cases belonged to the physician or the surgeon.

No assistant to the surgeon could dress any case unless he was a bound apprentice at Chirurgeon's Hall for at least seven years and have served at least two years of that time. The surgeon's assistant (who was called his servant) could not even apply a caustic, or open any "impostumes" or "sinuous ulcers" unless the master surgeon were present to direct the procedure. No dead body could be "opened, dissected, or dismembered" without the permission of the Treasurer.

Apparently there were no histories. On every bed a card was hung on which was the patient's name and the name of the chief in charge.

When a surgeon decided to perform a severe operation he was obliged to notify his colleagues, both medical and surgical, in case they should wish to be present.

The patients, if able, were absolutely obliged to go to chapel. There was an imperative order against swearing and neither the officers nor the poor were permitted to swear. They were also forbidden to abuse one another or strike and beat one another or to steal meat, drink, clothing or other things from each other. Inordinate drinking was forbidden, and so were incontinent living and immodesty.

When the patients began their meals and when they finished them they were obliged to ask the blessing of God and to return due thanks to God. It was particularly forbidden that any of the poor "contract matrimony with each other within the house." Gaming was forbidden and the sisters had to clean the wards by six o'clock in the morning. The rule was "that no person fetch or carry fire from one place to another in wooden vessels nor in other things which may be dangerous for fire." We remember that this was long before the time of friction matches and that the only known way of starting a fire, except by contact with embers, a lighted taper, or burning paper, was by use of the flint and steel. All patients able to work were obliged to help the sisters clean the wards and were not to be paid for it or rewarded in any way. The sisters were forbidden to take any money for washing "all weak people's clouts." It was ordered that but one person be put in one bed at a time, but this custom, as was previously stated, was not always followed in the children's ward. Every tenth bed was left empty in order that it might be thoroughly aired before any other patient could enter it.

The patients from the foul wards were not allowed to exercise in the yard or even to go to chapel.

We learn very many interesting things from the book about drugs, some of which we set forth:

Snail water was considered very valuable in consumption and venereal diseases. It was thought to be highly nourishing. It was made as follows: Six gallons of garden snails "cleansed and bruised," three gallons of earthworms "washed and bruised," and to this mixture add wormwood, ground ivy, carduus, pennyroyal, juniper berries, fennel seed, anise seed, cloves, cubebs, spirit of wine, and spring water. This is said to be most useful in "persons whose circumstances and manner of living have not habituated them to any delicacy."

The "sapphirene" or "blue eye water" was made by making a mixture of sal-ammoniac and water of quicklime and keeping the mixture in a brass pan or copper kettle until it became blue. It was filtered and was then ready for use. Three or four drops of this were dropped on an eye. It was used for ulcers and pustules, cataracts, and various other things.

Salivation was usually effected by mercurial inunction, and it was found then as we know now that many cases of syphilis in which the symptoms will not succumb to the internal use of mercury will pass away when inunctions are used. It was thought in St. Thomas's Hospital that inunctions were far more efficient than giving the drug internally.

Piony was mixed with lily-of-the-valley flowers, French brandy, lime flowers, male piony, mistletoe yolk, rue, and several

other things, including Russian castor, cubebs, mace, cinnamon, rosemary flowers, and lavender flowers. It was considered to be an excellent "cephalic," valuable in all nervous cases.

The "balsam of many virtues," which was taken internally as a remedy for gleets, gout, and other conditions, was a mixture of alcohol, gum of guaiacum, and Peruvian balsam. In contused and ulcerated wounds and in gunshot wounds, the "green balsam" had the greatest possible consideration. It was made of linseed oil and verdigris.

The "antimonial bolus" must have been of great power. It consisted of a scruple each of æthiops mineral (mercury triturated with sulphur) and crude antimony with a conserve of elder and white syrup sufficient to make into a bolus. A bolus was given twice a day.

The calomel bolus was made of ten grains of prepared calomel. This was taken at one dose. It was one of the drugs used to produce salivation. The dose was repeated as often as necessary. During the administration for purposes of salivation cathartics were given in the morning to help carry off the drug.

Garden valerian was regarded as a remarkable remedy against epilepsy, especially if mixed with rust of steel.

The jalap bolus contained thirty grains of jalap and was taken twice a week.

The tin bolus was called the "jovial bolus," and was made by mixing a drachm of the filings of tin with a drachm of red coral, and was made into a bolus with white syrup. This bolus was taken twice a week.

Turpeth mineral (the yellow subsulphate of mercury) five grains and tartar emetic three grains was a mixture taken to produce vomiting. The book states "in the working of this vomit it is needful to drink plenty of carduus tea, through defect of which I knew one who died."

The "viperine bolus" was esteemed. In order to make this one took half a drachm of the powdered flesh of vipers and enough white syrup to make a dose, and this was administered twice a day. There is no statement as to what it was used for.

Calomel was called Mercurous dulcis. A young child was given from two to eight grains and a grown person one scruple. "If it doesn't work strongly by stool it can cause as decided salivation as can be produced by inunction." It was regarded as highly valuable as a vermifuge in children. It was used largely in rheumatism, in venereal diseases, and to heal up old ulcers.

Castor (castoreum), a secretion obtained from glands connected with the reproductive organs of the beaver, entered into nearly all the nervine remedies. This book says "it is certainly a most noble drug and of great use in all distempers of the head." It was given for uterine conditions and in fevers to ward off delirium. It was also held to be diaphoretic. We regard castoreum as practically inert; perfumers find it valuable.

Onions, garlic, and oil of scorpions, mixed with pigeon's dung and one or two other ingredients, constituted a cataplasm used for buboes.

The "electuary of Mithridates" (named after its alleged author, the celebrated King of Pontus and Bithynia) contained over fifty ingredients.

Plasters of Burgundy pitch with turpentine were popular for painful joints and for kidney trouble. Mercurial plaster was frequently put upon tumors.

An expression of wood lice, the dose being two ounces a day, is in the dispensatory, but there is no statement as to its use. Peruvian bark was extensively used for ague. Extract of logwood was valuable in diarrhea.

The "pleuritic infusion" is highly recommended, and when we learn its contents we judge that even a disease might fly before it. It consisted of fresh horse dung, pennyroyal water, treacle water, and one or two other things, and the dose was one-half a pint daily. It was said to greatly lessen pain. The following advice is of

importance: "If the dose here mentioned be too noisome it may be lessened and repeated the oftener." It may well have been that a patient would have preferred to drink all the dose at once to get rid of it at one sitting.

The "viper liniment," containing the fat of vipers, was much valued for inflammation of the eyelids.

Liquid laudanum contained several ingredients besides opium. Sydenham's liquid laudanum was used for many afflictions. There was a preparation known as solid laudanum. In this preparation opium was mixed with canary, salt of tartar, long pepper, ginger, volatile oil of hartshorn, and oils of aniseed, cloves, and nutmeg. Purified opium was frequently prescribed under the name of Extractum Thebaicum—"It was used for just the same purposes as ordinary crude opium and by some is preferred thereto, but the difference is not worth disputing."

A diaphoretic mixture, much valued, was made of crab shells, crab eyes, red coral, white amber, contrayerba root, Virginia snakeroot, and Spanish angelica. Some physicians preferred to use crab claws instead of crab shells and crab eyes.

A powder used against spitting blood had as its main constituent dried horse hoof.

Scurvy was then a common disease and was treated by a mixture of orange juice, watercresses, scurvy grass, and brook lime. This remedy was of a "rubicund color" and was of real value.

A mixture of wood soot and asafetida with British Spirit was given in doses of one-half ounce three times a day, for what purpose I do not know. Rhubarb was evidently an extremely popular remedy.

Wood-lice wine was made out of live wood lice and was used in jaundice.

A portion of the book contains tables of the medicines used to cure certain diseases. Aneurism of a limb was treated by amputation, or, it is interesting to note, by excision. Nothing is said about operation for cancer of the breast. "Crooked bones" were treated by ointments. Diagnoses were very largely symptomatic; for instance, "weak loins," "painful back," "painful bowels or stomach," "itching," etc.

Diabetes is in the table of diseases, so are deafness, dropsy, rheumatism, diseased eyes, bad digestion, St. Vitus' dance, fevers, tender feet, dry gripes, lame hip, swelled knee, sore leg, leprosy, faintness, sore mouth, sore tongue, poison, sciatic pain, vapours, yaws and bastard yaws.

The methods of treatment in the days of polypharmacy lead me to feel that the picture prefixed to the book from which I have made citations is extremely appropriate. Among other things the picture shows two skeletons, a coffin, a gravestone, and an opening into the clouds surrounded by bodiless faces with wings on their necks. Underneath the picture is the following verse:

> In the midst of Life Death doth us pursue,
> Let each therefore with speed for Mercy Sue.

The smaller skeleton seen in the picture is saying:

> Prepare to die, for behold Death and Judgment is at hand.

It is scarcely worth while going into detail as to the dispensatory of St. Bartholomew's Hospital or of Guy's Hospital. The remedies are all of a similar nature to those used in St. Thomas's Hospital, although each institution had special formulæ which were particularly popular in that place.

A perusal of the above list of remedies makes one grateful for the revulsion of feeling in regard to huge doses, noisome medicines, and polypharmacy. We of this age may well congratulate ourselves on the establishment of a system of therapeutics founded upon a knowledge of the physiological action of drugs.

The Management of Pelvic Pain in Women

BY W. G. FRALICK, M.D.
New York, N. Y.

The lack of accessibility for inspection as compared to other parts of the body has rendered the diagnosis of abdominal pain, especially in women, proportionately more difficult. There are also certain accepted policies which interfere with the proper perspective in estimating the cause of pelvic pain in women. Intense pain not at all referable to the pelvic organs may appear to be of that origin, while they may be profoundly involved without pain, as they are supplied with sensory nerves in considerably less quantity than with sympathetic fibers. Yet while the neuroses incident to pelvic pain in women, as well as the discomfort associated with menstruation and the menopause, are frequently the objectives for treatment, careful investigation will frequently find an organic underlying factor. The peritoneal investiture is probably the most frequent seat of the pain, and this renders the diagnosis more difficult in women. While pressure symptoms, adhesions, and cellulitis may instigate severe pain in the ovarian region, it is questionable whether the pain primarily arises in the ovary itself. It is likewise doubtful whether the term "neuralgia of the ovary" deserves a place in gynecologic symptomatology. Other causes are lack of support of various structures, torsion of tumors, and malpositions of the uterus, especially when associated with tumors or pregnancy.

In approaching the question of the treatment of pelvic pain in women, certain additional factors should be taken into consideration. We cannot escape the necessity of considering the various neuroses to which women are subjected, both during normal and menstrual periods, whether or not due to anatomic causes.

It is generally acknowledged that pelvic pain is usually accentuated during the menstrual period. Lumbar and abdominal pain, frequently extending downward into the loins and limbs, may be the result of lack of support of the pelvic floor, and displacement of viscera, especially in the obese, and when the erect posture has to be maintained during the greater part of the day. The pains of surgical diseases of the kidneys, especially nephrolithiasis, while characteristic when occurring in the left hypochondrium, should not be immediately accepted as pathognomonic until the presence of flatulence has been eliminated. Constipation, probably the most frequent cause of generalized or indirect abdominal pain, should, at all times, be one of the first causes to receive the attention of the examiner. The anatomical relation of the appendix in women renders differential diagnosis more difficult, and here it is well to remember that most of the pain in women when of purely organic origin is rather due to peritoneal irritation than pain in individual organs, as the ovaries and uterus, as previously remarked, are provided more with sympathetic than sensory nerves. This should particularly be considered when ascribing many lateral abdominal pains in women to the ovaries. The pains of dysmenorrhea comprise a subject too exhaustive to be considered here to the extent that the subject deserves, excepting in as far as it pertains to alleviative medicinal treatment.

The increase in the number of women following industrial occupations has given the subject of dysmenorrhea an economic importance of no small caliber. Whether primary or secondary to other gynecologic affections, its satisfactory alleviation, whether medicinally or surgically, has been an unsolved problem. These sufferers have now run the gauntlet of all the coal-tar products, bromides, atropine, viburnum, glandular extracts, opium, codeine, morphine, and many other drugs and preparations, some of which temporarily delude on account of their alcoholic vehicles.

The "bearing-down pains" due to circulatory interference with the uterine structure and its anatomic supports and orificial

connections are too well known to be more than mentioned.

What to do between the first call for the relief of pain and the operating table has engaged the attention of gynecologists for a long time. In addition, it is necessary to consider carefully the subjects of preoperative and postoperative invalidism, resulting from the continued effect of pelvic pain.

In the rather fruitless search for a therapeutic measure between the extremes of mental suggestion and narcosis for the alleviation of pelvic pains in women, laboratory researches in synthetic chemistry during the last fifty years appear to have finally solved this much debated problem. These researches were largely actuated by the want of a drug that would be a hypnotic without being a narcotic, and which could rationally be employed for insomnia due to pain. During all these years it has been consistently taught and written that opium and its derivatives alone could meet this requirement. An examination of most of the text-books on gynecology will show a rather uniform absence of the subject of analgesia for the various pelvic pains, beyond the usual array of drugs.

The history of the more modern hypnotics will show two outstanding factors. First, their introduction was not the result of empiricism, and secondly, they being the result of synthetic chemistry, their development was stimulated by a desire to produce a drug that is analgesic and hypnotic without producing narcosis or habituation, and possessing a minimum of toxicity. A combination of the applied principles of physiological action and synthetic chemistry has evolved a biochemical mastery of many barren fields. The most conspicuous of these have been the latest advances in the utilization of the barbituric acid series in the evolvement of some of the newer hypnotics. Many of these have been of great value, even in the neurosis attending irregularities of menstruation, but frequently failed where pain was the predominating factor.

In addition to the recurring monthly manifestations of deranged nerve stability, there is frequently superadded a dread of the next approaching menstrual period on account of the pain, which apprehension in itself accentuates the neurosis. The fact that there exists a manifest association between the nervous system and menstruation, as well as in many other gynecologic affections, has in many instances induced an exaggerated psychoneurotic susceptibility, which is easily influenced by even minor pelvic symptoms.

In these classes of manifestations of the nervous system due to irritability from pelvic irritation, and in the frequently attending insomnia, the modern hypnotics had found their true field. Their limitations however were always reached when severe pain of definite origin was demonstrable, and to push them in increasing doses in such conditions overstepped the margin of safety, as frequently attested by reported cases of serious toxicity and even death.

The molecular control which had been the basis for research in synthetic chemistry finally actuated the chief objective, that of producing a drug which would meet the therapeutic requirements for producing analgesia, and still preserving the hypnotic properties without the production of narcosis. During the periods of investigation, three epoch-making observations among others assisted in this research: First, that of Meyer;[1] second, that of Overton;[2] third, the establishment of the Meyer-Overton law,[3] and recently that of Frei and Grund.[4] The Meyer-Overton law referred to by M. A. Burns,[5] in the first contribution on allyl-isopropyl-barbituric acid and its combination with amidopyrin (allonal), is associated with the findings of Tiffeneau,[6] to the effect that the alkyl-barbituric acids are combinations of marked hypnotic groups, with a molecular nucleus possessing a relatively small lipoid solubility. It was then shown that should the alkyl-radicals be so changed as to increase the otherwise small lipoid solubility, the hypnotic power of the substance can be successfully increased. Yet notwithstanding, up to the time of the announcement of allonal the hypnotics became relatively valueless in proportion to the amount of

pain present. To push a hypnotic with the elimination of pain as the objective always was recognized as a dangerous therapeutic fallacy.

The objection has been eliminated in the case of allonal, for by incorporating amidopyrin with allyl-isopropyl-barbituric acid, there has been produced a substance possessing hypnotic and analgesic properties without narcosis. The ultimate effect of such an addition to therapeutics in general, and for the prevention of addiction in particular, is self-evident. There is also the additional value in that the drug can be used in the treatment of ambulatory cases, especially those to which opium or its derivatives cannot be safely entrusted. In kidney affections and where there is probability of arresting the secretions, allonal should prove a valuable substitute. The most satisfactory element for stimulating further trial of the preparation on the part of the medical profession is presented by the facts that no extravagant claims have been made for the drug, the character of the painstaking researches which led up to the finished product, together with the severe tests to which it has been put, and the definite purpose (that of finding a suitable substitute for morphine) which has been the one chief therapeutic objective.

The most recent investigation into the relations between hypnotic action and chemical constitution and physicochemical properties is reported by Frei and Grund (*l. c.*). The study, entitled "The Theory of Narcosis," covers a determination of the solubility in water, surface tension, and diffusibility of a series of hitherto unknown hypnotics. It was found that those compounds which are readily diffusible though not very soluble in water are, owing to their higher lipoid coefficient, better hypnotics than others which do not possess these properties. This law was best realized in the barbituric acid derivatives; allyl-isopropyl-, ethyl-isopropyl-, isopropyl-, brom-isopropyl-, allyl-iso-amyl- and diethyl-barbituric acids were the members of this series investigated. The results show allyl-isopropyl-barbituric acid to be more diffusible and consequently a better hypnotic than the other barbituric acid preparations. It is pleasant to find these highly scientific data so distinctly confirmatory of the considerations regarding the intimate relation between lipoid solubility and high hypnotic value which were cited in the first article on allonal (M. A. Burns, *l. c.*) as the theoretical foundation for the superior hypnotic properties of allyl-isopropyl-barbituric acid and its compound, allonal.

The first reports on the action of the new drug dealt with pain and insomnia met with in the neurological field (M. A. Burns); good results in the control of surgical pain were then reported by J. H. Schall;[7] a recent article by Sydney Kuh and F. J. Gerty[8] emphasizes its effectiveness in those cases in which restlessness and sleeplessness are due either to pain or to psychosis.

The observations recorded by Dr. M. A. Burns led me to an early investigation, and during fourteen months I have found it particularly effective for diminishing the psychoneurotic involvement and irritability so often associated with pelvic pains in women as well as for the relief of the pain and insomnia. Noteworthy has been the action of a single tablet in those ambulatory cases, semi-invalids, cases of pelvic disease which we may designate pathologically atrophic as distinct from the macroscopic, such as those with irritability and pain, due to an atrophic or indurated ovary, preceding and following menstruation. In hypertrophic conditions with pressure symptoms in various flexions and their reflex manifestations, also, I have found one tablet at night usually sufficient to allay the apprehension, restlessness and pain before and irritability during and after the catamenia. Only occasionally has it been necessary in these cases to prescribe an additional tablet during the daytime. In my earlier experiences I used to begin with doses of two, three and even more tablets; a single tablet at a time, however, gave relief from pain and eight or nine hours' sleep in so many severe cases that now, benefiting by experience, I almost invariably try out the effect of a single tablet, in ambu-

latory cases particularly, increasing the dose to two only when necessary. The conclusions of Kuh and Gerty are that single doses up to 20 grains (8 tablets) are safe and that after-effects are few. I have never given so high a single dose, but I have given 8 tablets per day for eight successive days in treating a morphine addict, and, of course, at times in serious conditions have at once commenced with what might be considered massive dosage. The action of a small dose is well exemplified in the case of a very nervous primipara in whom one tablet at a time once a week or twice a week as required during the last three months of pregnancy proved sufficient to allay great restlessness and irritability. During the last week one tablet nightly was given; it happened that the last of these was given one evening at 7 P.M. just before she was removed to hospital; there were no false pains, and three and a half hours later this very nervous primipara had a normal delivery of a nine-pound child.

A factor that has made a strong appeal to me in consideration of the new drug is that in many of my experiences with it, pain, insomnia, and states of mental disturbance have been relieved with avoidance of the use of narcotics, in many instances in which that was a matter of great importance—cases in which before the advent of allonal I would have been impelled to prescribe one or other of the opium derivatives.

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33 EAST 60TH STREET.

A Suggestion in the Treatment of Carbon Monoxide Poisoning

BY E. W. BEAUCHAMP, A.B., M.D., AND OLAF BERGEIM, PH.D.

(From the Laboratory of Physiological Chemistry, Jefferson Medical College, Philadelphia)

The value of the administration of carbon dioxide in the treatment of carbon monoxide poisoning has been established by the extensive investigations of Haggard and Henderson.[1] The only drawback to their method is the rather elaborate apparatus required for the administration of the mixed oxygen and carbon dioxide. We wish to suggest the trial of a simplified procedure for the administration of carbon dioxide in cases where such an apparatus is not available.

The toxic action of carbon monoxide appears to be solely due to its firm combination with the hemoglobin of the blood, the power of which to oxygenate the tissues is thus reduced. The systemic disorders and lesions observed are believed to be secondary to the anoxemia produced.[1] Balthazard[2] found the hemiplegias and other nervous accidents observed to be due to thrombosis resulting from slowing of the circulation during asphyxia, and concluded that carbon monoxide was in no way a protoplasmic poison. Nor are the red

1 Haggard and Henderson: *Proc. Soc. Exp. Biol. Med.*, 1919-20, xvii, 205; *Jour. Am. Med. Assn.*, 1922, lxxix, 1137; *J. Ind. Eng. Chem.*, 1922, xiv, 229.

2 Balthazard: *Bull. Acad. de Med.*, Paris, 1919, lxxx, 1437.

cells injured irreparably if oxygen is promptly supplied, for oxygen will drive out the carbon monoxide from the blood, the reaction with hemoglobin being completely reversible.[3]

During intoxication the accumulation of carbon monoxide in the blood entails an in-

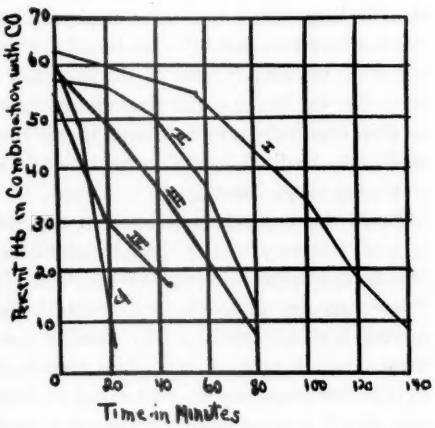

FIG. 1.—Fall of carbon monoxide in the blood after treatment. I, II, III, and V are curves of Haggard and Henderson after no treatment, oxygen inhalation, air and carbon dioxide, and oxygen and carbon dioxide, respectively. IV represents our results with insufflation of expired air.

creasing oxygen deficiency which in turn induces an augmentation in the volume of air breathed per minute. As this process continues the lack of circulating oxygen causes lessened oxidation in the tissues and leads to inadequate carbon dioxide formation. Carbon dioxide is also lost at each expiration. As the carbon monoxide of the blood increases the carbon dioxide decreases. Finally the carbon dioxide level falls so low that the respiratory center is not adequately stimulated. An animal in this condition removed to fresh air breathes feebly for one-half to one hour. Some carbon monoxide is thus displaced by oxygen, which in turn leads to the production of new carbon dioxide, and respiration gradually returns to normal. The therapeutic indications are therefore as follows:

1. Removal from the poisoned atmosphere.

2. Artificial respiration if breathing has stopped.

3. Administration of 5-per-cent carbon dioxide in oxygen.

4. Stimulants if required.

5. Maintenance of body temperature.

6. Later symptomatic and hygienic measures as indicated.

In studying the subject of carbon monoxide poisoning it occurred to the first author that indirect intermittent mouth-to-mouth insufflation of carbon dioxide might be employed, and we have carried out some experiments along this line. We do not regard our work as a final or complete demonstration but as suggestive of the value of this very simple procedure.

Haggard and Henderson suggest the use of five-per-cent carbon dioxide in oxygen. Expired air contains about 4.38 per cent of carbon dioxide and 16 per cent of oxygen. It seems, therefore, that a donor should be able to give through a simple mask and tube apparatus sufficient carbon dioxide to stimulate the respiratory center to more normal activity, causing increased pulmonary ventilation, freer elimination of carbon monoxide, and better absorption of oxygen.

The mask we used in our animal experiments consisted of one-half of a football

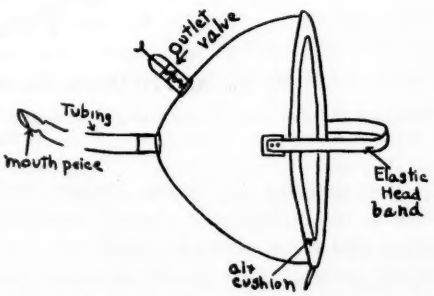

FIG. 2.—Mask suitable for the administration of expired air.

bladder. At the pointed end were adjusted two valves (ordinary inner tube valves without plungers). To one valve a tube was attached. This served as the intake valve. The mask was applied over the

3 Nicloux: *Medicine*, Paris, 1922, iii, 913.

animal's head. The donor forced air into the mask while the dog inspired, a finger blocking the outlet valve. During expiration the outlet valve was opened and the inlet tube blocked by the donor's tongue. At intervals the mask was removed to permit the breathing of fresh air.

If we compare the results of our experiments with those of Haggard and Henderson the method seems promising. Thus in one experiment the dog was removed from the asphyxiating chamber at 3:25 P. M. He was breathing slowly, irregularly, and with difficulty. He was completely relaxed. A sample of blood was taken from the femoral vein at 3:30 and insufflation instituted. At 3:38 the dog tried to get up. At 3:45 the mask was removed, and at 3:50 another blood sample was taken. At 3:52 insufflation was resumed. At 4:00 the dog was permitted to get up. He walked about the room and climbed a flight of eight stairs. At 4:10 he was running about, showing no unsteadiness, appreciating his surroundings, and appearing quite normal. At 4:15 a blood sample was taken.

Blood analysis showed carbon monoxide 55 per cent at the beginning, 30 per cent after twenty minutes, and 18 per cent after forty-five minutes. The tannic-acid method as employed by Haggard and Henderson[1] was used. In Fig. 1 we have plotted our findings with those of Haggard and Henderson.[1] In other experiments also recovery occurred about as rapidly as in the experiment described, and more rapidly than in dogs left alone after asphyxiation. An increased coagulability of the blood was noted. This may be one of the factors responsible for the vascular thromboses noted in this condition and resulting in nervous accidents, credited by Balthazard merely to a slowing of the circulation.

From the chart it will be seen that we secured recovery sooner than Haggard and Henderson using air and carbon dioxide. These authors also obtained much better results with air and carbon dioxide than with air or oxygen alone. Their results as well as our own may thus be taken to indicate that the insufflation procedure is well worthy of trial in emergencies when their apparatus is not available and because of its simplicity and ease of application. A suitable mask for man may easily be improvised along the lines indicated in Fig. 2.

The Incidence and Prognosis of Chronic Prostatitis*

BY B. A. THOMAS, M.D., AND J. C. BIRDSALL, M.D.

Professor and Associate, respectively, of Urology, Graduate School of Medicine, University of Pennsylvania, Philadelphia

The statistics of various authors relative to the incidence of chronic prostatitis have shown an increase during the past thirty years as methods of diagnosis have become more exact.

According to Young, Geraghty, and Stevens,[1] who reviewed the literature in 1906, Montagnon in 1885 found 70 per cent of cases of urethritis developed prostatitis; Eraud in 1886 found 70 per cent; Pezzoli in 1894 found 80 per cent; Casper in 1903 found 85 per cent; Waloch in 1903 found 94 per cent.

Hogge and Frank believe that every case of posterior urethritis is complicated by prostatitis, while Oberlander and Kollmann are of the opinion that it is possible to have a chronic posterior urethritis without involvement of the prostate gland.

This paper is based on an analytical study of 268 cases of acute gonorrheal urethritis,

*Read before a joint meeting of the Philadelphia Urological Society and the Philadelphia County Medical Society.

[1]Young, Geraghty, and Stevens: *Johns Hopkins Hosp. Reports*, 1906, xiii, 881.

and 878 cases of chronic gonorrheal urethritis which were examined and treated in private practice by us during the past ten years, and, therefore, more carefully studied than is usually the case in hospital dispensary work. The diagnosis of acute gonorrhea was confirmed in each case by the demonstration of the gonococcus in smear from the urethral discharge. All of the 878 cases of chronic gonorrhea presented a clear history of having had an acute attack.

Of the 268 cases of acute primary gonorrhea, 138 were referred back to their own physicians or treated by us such a short time that no diagnosis of prostatitis was made.

Fifty-three cases (40.7 per cent) of the remaining 130 cases of acute gonorrhea were discharged as cured without having developed prostatitis. These patients were treated by means of urinary antiseptics, hand injections, and later total irrigations. Stress also was laid upon careful instructions as to diet, exercise, and avoidance of sexual excitement, since these precautions doubtless play the most important rôle in the treatment of the disease in its acute stage. Repeated microscopical examinations of the secretion obtained after massage of the prostate failed to show the presence of more than two to four W. B. C. to the field (1/6-inch objective), the majority of these cases being examined after a month's probation following discontinuance of active treatment.

Twenty cases (15.3 per cent) that developed prostatitis as a complication of acute gonorrhea did not continue treatment long enough to furnish data of any value.

Of the remaining 57 cases (43.8 per cent) of acute gonorrhea that developed prostatitis as complication:

Three (5¼ per cent) of the cases developed acute abscess of the prostate gland. One of these was advised to have immediate operation, but as he refused he was lost sight of. In the second case the abscess ruptured into the urethra on the eve of operation—this patient was discharged as cured in six months. Prostatotomy was performed on the third case with improvement in seven months.

Thirty-one (54.3 per cent) cases showed improvement after treatment for a period of two to eighteen months, an average of eight months, but voluntarily discontinued treatment before they could be discharged cured.

Twenty-three (40⅓ per cent) cases that developed prostatitis as a complication of acute gonorrhea were discharged as cured, being treated over periods from two to twenty-four months, or an average period of nine months.

Eight hundred and seventy-eight cases of chronic gonorrhea have been examined and treated by us in the past ten years. All of these cases gave a history of having had gonorrhea one or more times. The diagnosis of chronic prostatitis was made by microscopical examination of the secretion obtained after massage of the prostate gland. Normally the prostatic secretion obtained after massage shows an average of two to four leucocytes or pus cells upon microscopical examination, but when the secretion obtained by massage, in this series of cases, showed an increase over this number a diagnosis of chronic prostatitis was made. This analysis of cases does not include the occurrence of epididymitis or those cases in which the seminal vesicles were palpable.

Five hundred and ninety-one cases (68.6 per cent) were seen so few times that no reliable data are available as to the prognosis.

Seven (1 per cent) cases of chronic gonorrheal urethritis were observed in which there was no demonstrable involvement of the prostate gland.

Of the remaining 273 (31.4 per cent) cases of chronic gonorrhea with prostatic involvement, 105 (38.4 per cent) were discharged as cured, being treated over periods from one to forty-eight months, or an average period of 10.9 months. The treatment given in these cases has been prostatic massage every fourth to fifth day, followed by total irrigations of potassium permanganate or silver nitrate solution. In our

experience, acriflavine, mercurophen and mercurochrome have not measured up to expectations. In some cases dilatation, deep urethral instillations and topical application of silver nitrate solution were given. Urinary antiseptics, such as salol, urotropin, and oil of sandalwood, were prescribed, and general instructions given as to diet, exercise, and avoidance of alcoholic beverages and sexual excitement. In addition to the above routine treatment nineteen (18 per cent) of the cases were given autogenous or stock bacterins or a combination of both. The length of time these nineteen cases were treated and tentatively cured ranged from two to twenty-four months, or an average of 10.5 months. The eighty-six (81.9 per cent) cases that received routine treatment minus bacterins required an average time of 11.5 months before they could be discharged as tentatively cured. Six of the 105 cases developed synovitis—four had involvement of the knee, one in which the spine and another in which the feet were involved; these six cases were under treatment from three to forty-eight months, or an average of 18⅓ months.

One hundred and sixty-eight (61.6 per cent) cases of chronic gonorrhea with chronic prostatitis were treated or are still under treatment with improvement. The average length of time these cases have been treated is 10.5 months. Sixteen of these 168 cases developed synovitis and were treated with improvement over a period of two to seventy-two months, or an average period of twelve months.

The knee was involved in seven cases; the feet were involved in six cases; and the spine in two cases.

There was polyarticular involvement in one case.

Four of the 168 cases developed abscess of the prostate gland. All were operated upon with improvement.

Two of the 168 cases developed prostatism. One was operated upon with improvement, and the second case was treated for two years with no improvement. This patient had refused operation.

CONCLUSIONS.

1. In this series of cases of acute gonorrhea 77 (59.2 per cent) cases developed prostatitis. Twenty-three (40⅓ per cent) cases were discharged as cured after treatment over an average period of nine months. Thirty-one (54.3 per cent) cases showed improvement after treatment over an average period of eight months.

2. Of the 878 cases of chronic gonorrhea examined, 871 (99 per cent) had involvement of the prostate gland—chronic prostatitis.

3. Two hundred and seventy-three cases of chronic prostatitis were treated—105 (38.4 per cent) cases were discharged as cured after being treated over an average period of 10.9 months; 168 (61.6 per cent) cases were treated or are still under treatment with improvement after treatment over an average period of 10.5 months.

116 South Nineteenth Street.

Ulcerative Stomatitis and its Treatment by the Intravenous Injection of Arsenic.

Morgan, in the *American Journal of Diseases of Children* for May, 1923, states that twenty-five cases of ulcerative stomatitis due to infection by Vincent's organisms were treated by arsenical compounds either intravenously alone or combined with local applications. One patient died shortly after the injection as the result of an intercurrent disease. The other twenty-four were cured in an average of five and one-half days after the first injection. The cure in every case appeared to be permanent.

In 40 per cent of the cases the gingivitis was accompanied by ulceration of the mucous membrane of the tongue and inner aspect of the cheeks. These ulcers, as a rule, did not appear to respond readily to the arsenical medication, and it is probable that they were not a manifestation of the same infection which produced the gingivitis, but rather the result of a secondary pyogenic infection.

Editorial

THE INTRAVENOUS USE OF ANTISEPTICS.

Asepsis, or a condition in which a part, or all, of the human body is maintained free from infection, is to be distinguished from an attempt at antisepsis when it is known that infection already is present. Asepsis belongs distinctly to the field of preventive medicine and surgery. Antisepsis belongs to the field of therapeutics, the design being to produce a condition in the body which is unfavorable, or destructive, to microörganisms which are present, or with the hope of stimulating the protective processes so that they may triumph over the invaders.

One of the inherent difficulties attached to antisepsis is the difficulty of finding a substance which while capable of destroying the parasite, which is threatening the patient's life, is incapable of destroying any of the protoplasm which goes to make up the human organism.

Unfortunately, the cells of the human body have a far greater susceptibility to toxic agents than does the protoplasm of the various parasites which infest it, a fact which is to be borne in mind when the physician is tempted to employ substances which have an antiseptic or bactericidal power. A moment's thought will reveal the fact that the phagocytes of the blood stream are far more susceptible to toxic substances than the bacteria found in that blood stream, and not only is this true, but they are far more susceptible to all other agents. Thus, it is known that the typhoid organism may remain in a frozen mass for many months and still be capable of producing infection, whereas the phagocytes, or any other blood corpuscle, or the cells making up the endothelial lining of the blood-vessels, are destroyed by a multitude of influences which may be in existence only a few moments. The thought, therefore, that by injecting so-called antiseptics we can combat bacteriemia and general septicemia, however promising it may be when first considered, is thrown to the ground when further thought reveals that such a substance may fail, in its necessarily dilute state, to destroy the invader, and may destroy the cells of the body. Further, it may prevent the body from exercising its own protective powers, as illustrated, for example, by the processes of phagocytosis and bacteriolysis.

While a large number of men have at various times resorted to the intravenous injection of antiseptics, the results which have accrued have not been such as to encourage the majority of medical men to follow in their footsteps, and we have seen more than one case in which such treatment has not only proved a failure, but so far as human observation can be relied upon, has been distinctly disadvantageous to the patient.

In no field of medicine at the present day is the French cynic's statement that "Doctors are persons who pour medicines of which they know little into bodies of which they know less" more true than in the case of intravenous therapy designed to destroy bacteria in the blood stream.

Constantly bearing in mind the fact that the protoplasms of the lower forms of life, such as the bacteria, are possessed of extraordinary vital resistance, it becomes evident at once that our only hope in regard to intravenous antiseptics lies in the discovery of a substance which because of its chemical composition has an absolute affinity for the parasite and little or no affinity for the widely differentiated protoplasmic cells of the human body. We have illustrations of such special affinity in the case of quinine and the malarial parasite; of emetine and the amœba hystolytica, and of arsphenamine, and nearly related arsenicals, for the spirochetæ of syphilis, but beyond these three we have up to the present time no similar products.

Our attention has been called to this matter once more by an interesting communication made by Piper to the *American Journal of Obstetrics and Gynecology* upon

"The Treatment of Puerperal Sepsis by the Use of Mercurochrome Intravenously," which embodies his experience in the laboratory with animals and at the bedside with infected puerperal women. It has been shown that this drug exercises a distinct germicidal action on the staphylococcus aureus and the bacillus coli in the proportion of 1:5000, the first organism being destroyed in five minutes and the colon bacillus in fifteen. Piper and his colleagues used defibrinated blood as a medium of suspension and a hemolytic streptococcus as the organism, this organism being taken from a virulent case of puerperal septicemia, and they found that with a 1:8000 dilution of mercurochrome these organisms were destroyed in forty minutes, and a 1:16000 dilution used after the plates had been prepared for an hour showed but two colonies and no further growth. They then proceeded to use mercurochrome intravenously in rabbits who were inoculated with the hemolytic streptococcus. They found that an inoculated rabbit died within thirty-six hours, and another rabbit at the end of twenty-four hours was comatose with a blood culture that was strongly positive. At this time, mercurochrome in the proportion of 5 milligrammes per kilo was given intravenously. The blood cultures remained strongly positive for several hours, but five hours after the injection of mercurochrome the animal was distinctly better, able to sit erect, and eating. Twenty-four hours, however, had not elapsed before the animal became worse, the blood cultures became positive, and therefore a second injection was given, and then a third. On each occasion the blood cultures became negative. An attempt to enucleate an eye which became infected resulted in death of the animal.

All told, they used some thirty animals. In some instances mercurochrome seemed to produce marked effects for the better, but it can hardly be said that the final results were brilliantly successful. They certainly showed, however, that such dilutions may be used without demonstrable harmful effects.

An examination of the clinical reports of five patients also leaves the impression that while mercurochrome may be an aid toward recovery, it is far from proving itself a life-saving preparation.

It is interesting to note that in the first case which gave a negative blood culture, but which undoubtedly was septicemia and in which death seemed inevitable, mercurochrome injected repeated several times temporarily rallied the patient. Later a positive blood culture was obtained, and this became negative under treatment, but the patient eventually died. In another case the infection was the streptococcus viridans. Each injection seemed to make the patient better. She was several weeks under treatment and then left the hospital and was lost sight of, but was subsequently reported as dead. The third case, in which the puerperal septicemia was due to a hemolytic streptococcus in the blood, a pelvic abscess developed, which was opened and drained, and the patient made a good recovery. How much this was due to the surgical interference and how much to the mercurochrome is doubtful. In the fourth case, which apparently survived, the author was unable to report the actual end result. The fifth case was a moderately severe one of pyelitis in a non-pregnant woman. The symptoms disappeared, but she still had pus in the urine.

It is noteworthy that injections of mercurochrome produce a very definite and severe reaction, characterized by a chill and high temperature, and the question arises as to how much benefit accrues from the mercurochrome and how much is due to the reaction induced by its injection. In other words, is it a specific effect or is the benefit derived identical with that which some investigators have found to follow the use of sterilized milk, dead typhoid bacilli, or egg-white? That is, are the results practically identical with those which follow protein therapy?

The technique employed in the case of human beings by Piper consisted in injecting 30 cc of a one-per-cent solution for the first one hundred pounds of body weight,

and 5 cc additional for each additional 30 pounds of body weight. The solution should never be used unless perfectly clear and should always be freshly prepared. It is given with a fine needle and a large syringe at a temperature of 100°, and the injection is made very slowly. For the relief of the chill when it occurs, Piper applied external heat, and bismuth for the coincident diarrhea, if this condition continued long enough to threaten to be exhausting. The dose should not be repeated so long as there is any evidence of the dye in the urine or in the bowel movements.

Piper concludes that a solution of mercurochrome given intravenously in proper doses appears in some cases to be of great value and to have no deleterious effects. This latter statement is the chief reason for mentioning the employment of this drug in this place, as it justifies us in trying this remedy with the hope that it may do good and with some assurance that it will not do harm, as would intravenous injections of bichloride or formaldehyde solutions. One of the difficulties which stand in the way of determining the actual value of this method is that the physician naturally hesitates to resort to it until he is face to face with a desperate condition, and so uses the drug when the infection is so far advanced that recovery under any treatment is quite impossible.

Piper tells us that mercurochrome is useless against micrococcus viridans. Our own experience leads us to the conclusion that acute, or severe, nephritis absolutely contraindicates its use.

POSTURAL REST FOR PULMONARY TUBERCULOSIS.

The work of Forlanini in Europe and Murphy in this country, followed as it has been by a host of other clinicians, has placed the use of artificial pneumothorax in the treatment of pulmonary tuberculosis upon very safe and sane grounds, provided this therapeutic procedure is carried out with the proper technique and the patients are well chosen. Every one knows that the best results are obtained in those patients in whom the lesion is largely if not entirely unilateral and in whom multiple adhesions are not present. The underlying principle of the treatment is to put at rest a diseased organ.

The question has naturally arisen in the minds of some clinicians as to whether a certain degree of rest cannot be given a diseased lung by less rigorous treatment than the induction of artificial pneumothorax.

It will be recalled that about two years ago Webb, Forster and Gilbert of Colorado Springs contributed a paper upon this subject. They claimed as a result of their investigations that a fairly adequate splinting effect or rest may be produced by posture, and they reminded us that normal respiration occurs more than 24,000 times in twenty-four hours. Recognizing the fact that posture enables the tuberculous patient to readily get rid of sputum, which, if he occupied another position, would prove a difficult task, they also recognize the value of allowing the patient with much expectoration to lie for a short period several times a day on the unaffected or slightly affected side to permit drainage. The greater part of the time, however, is passed lying upon the affected side, a small pillow often being placed under the ribs to increase fixation and to cause the upper lung to carry on compensatory activity. It is true that in some patients this position is not comfortable, but these clinicians have found that with a little training and by beginning the use of this posture for short periods until the patient becomes accustomed to it, the objections to it on the part of the invalid can be largely put aside. They also claimed that in a few weeks this thorough rest produced results which compared favorably with artificial pneumothorax, in that there was a subsidence of fever, a diminution of cough and sputum, and an almost complete disappearance of râles, so that many patients who had been

considered as certainly requiring the application of artificial pneumothorax have, in their hands, been restored to health by such measures.

PREOPERATIVE PURGATION.

Practitioners of thirty years ago will recall that a warm battle was waged over the question as to whether patients suffering from appendicitis should receive a purge, either with the idea of clearing out the alimentary canal prior to operation or with the thought that it might favorably influence the local inflammatory process. The late Joseph Price of Philadelphia was most bitter in his antagonism to this method, and his views have now been practically universally accepted.

For many years after, and even up to the present time, it has been customary with many physicians and surgeons to administer some form of purge to a patient prior to any operative procedure, with the thought that by having what they called a clean alimentary canal, the patient is in a better position to avoid postoperative complications. But here again the leading surgeons of the world are to-day united in the view that preoperative purgation is a serious error, although, of course, in a patient who is severely constipated it is better to get the alimentary canal in order by a number of days' treatment than to proceed with operation in the presence of a heavily loaded colon.

As illustrative of the campaign which is being waged against preoperative purgation, a paragraph from a recent work upon the preparation of patients for operation by Lefebvre, who is Chief of the Surgical Clinic of the Faculty of Toulouse, is of interest. He quotes the following from Faure:

"For a very long time I did what I had always seen my masters do, and I purged my patients conscientiously on the eve of operation. Then I asked myself why we purged them thus, and I thought that it was without doubt because our masters purged them. I also thought that if our masters purged them it was because they had seen their masters do it. So that finally I arrived at this conclusion, that if to-day we purge our patients on the eve of operation it is really because Dupuytren purged them."

As a matter of fact this paragraph might be applied to many other procedures which are still adhered to and which are of doubtful wisdom.

TETANUS ANTITOXIN IN HUMAN BLOOD.

Tenbroeck and Bauer have recently published the results of a research, in the *Journal of Experimental Medicine,* the chief object of which was to determine whether the existence of tetanus bacilli in the alimentary canal of man exercised any influence in the development of antitoxin in his blood. The question may arise as to whether this is not purely academic, but further examination of their paper shows that it possesses definite therapeutic import.

They found that in twenty-six individuals who carried tetanus bacilli in their digestive tracts the blood contained appreciable amounts of antitoxin, and that in thirty individuals with no tetanus-like organisms, with two exceptions tetanus antitoxin was not present in the blood.

It has been known for a long time that tetanus bacilli may exist in the intestinal tube of man. More than one rectal surgeon has been so unfortunate as to find out this fact from the clinical standpoint because tetanus has developed after an operation for hemorrhoids.

The two points of practical importance in connection with prophylaxis and treatment, however, are (1) that such tetanus bacilli carriers may transmit the infecting organism to areas which ordinarily are not suspected of being capable of bearing infection, and (2) as Tenbroeck and Bauer point out, the question arises as to whether it might be useful in armies, and in regions where tetanus infections are common, to

establish the tetanus bacillus in the alimentary canal so that immunity of the individual might be induced. They admit that this plan is only a suggestion, since, of course, it is evident to our readers that it is a two-edged sword. While it may be true that the implantation of tetanus bacilli in the alimentary canal tends to produce antitoxin in the blood and consequently a certain degree of immunity, on the other hand it is quite possible that the introduction of these organisms into the alimentary canal might result in their out-wandering and finding a place to develop as soon as an injury, by lowering the vitality of the tissues in one locality, provided an opportunity for their invasion.

THE ACTUAL VALUE OF BLOOD-PRESSURE READINGS.

Quite a number of years ago the writer of this editorial pointed out, in an article contributed to the *American Journal of the Medical Sciences,* that there was too great a tendency to standardize blood-pressures and that wide variations in both systolic and diastolic blood-pressure were frequently met with in perfectly normal individuals. Some persons belong to what might be called a high blood-pressure class and others to a low pressure class, and more important still, it is to be constantly recalled that when after the fourth and fifth decade the blood pressure is higher than is considered normal under the standard, it is not of necessity to be considered an evil, but rather an attempt on the part of the body to maintain an adequate circulation and thereby to compensate for some arterial thickening which would interfere with the proper distribution of blood if the pressure was not increased. This is a point all too frequently overlooked, and efforts are made to reduce blood-pressures, which, while theoretically abnormally high, are actually necessary for the patient's comfortable existence and the proper functioning of his organs.

In this connection, a paper has been recently published by Thompson and Tedd in the *Journal of the Royal Army Medical Corps* entitled "Old Age and Blood-pressure Problems." They conclude, as a result of their studies of very old people, that the records are of more theoretical interest than useful in diagnosis and treatment, pointing out that a man of over 80 with no subjective or objective signs, whose mechanism has been adapted to a 200 systolic and a 100 diastolic pressure, is not a case of hypertension to be treated with nitrites and iodides nor to be carefully dieted and subjected to balneotherapy. As they put it, the medical attendant should be thankful that the man has been left with what is probably a compensatory and beneficent high systolic pressure. This statement is in accord with the statements which we made many years ago. Of course freedom from anxiety and other causes of nervous stress and strain is advantageous for such persons, as it is advantageous for all persons, but these investigators emphasize the point also made by many others, namely, that brooding over their own blood-pressure has a very evil influence, and they protest against telling patients that their blood-pressure is high or low, since such persons have no knowledge by which they can estimate the significance of such a statement. Every one of experience is aware of the fact that a certain proportion of such people become hypochondriacal or alarmed when such information is given them, even although they may be assured that it is not a cause for worry.

WHAT IS THE SIGNIFICANCE OF THE LYMPHOCYTE INDEX IN TUBERCULOSIS?

For a number of years much interest has been shown in the question as to the significance of the number of lymphocytes in the blood in pulmonary tuberculosis.

Some years ago we called attention to an article by a Colorado clinician in which he asserted that his experience led him to

believe that an increase above the normal in the number of lymphocytes was of diagnostic value in determining the presence of tuberculosis. More recently this point of view has changed, and the feeling seems to be that a lymphocytosis is to be used not so much as a diagnostic factor, but as a prognostic factor.

In a paper recently published by Webb, Gilbert and Newman in the *American Review of Tuberculosis,* they point out that there is much to support the idea that the higher the lymphocytosis in tuberculosis the better the prognosis, and they regret that this view has not received the general recognition which they believe belongs to it. Not only have their own researches seemed to indicate the correctness of this opinion, but other literature is quoted along the same lines.

Basing their conclusions upon results of a ten years' investigation, they believe that it is of greater value than the complement fixation test and the Arneth's index. They made 2000 successive counts of 400 tuberculous patients in all stages of the disease, and they found that the average lymphocytic index in 100 normal individuals was 43; in 130 arrested or apparently cured cases, 45; in 120 improving cases, 37; in 100 failing cases, 24; and in 40 cases progressing to death the lymphocytic index was only 16. They conclude that where the lymphocytic index remains below 20 the outlook is practically hopeless, since in this class 58 per cent have died, 29 per cent are confined to bed, 10 per cent are able to be up and about, and only 3 per cent are able to work part time. So too a steady or gradual fall in the number of lymphocytes is of significance, whereas a gradual rise is a most encouraging sign.

In contrast with the figures which we have just given, they report that of the patients whose index persisted above 40, only 2 per cent have died, 7 per cent are confined to bed, 20 per cent are up and about, and 71 per cent are leading a normal life. Those with an index over 30 may be considered favorable, whereas those below 30 have a doubtful outlook, or to use a phrase, which was at one time often employed in connection with the temperature curve in typhoid fever, a lymphocyte count around 30 is a "period of changing fortunes."

INFECTIOUS COLITIS.

The symptoms of this affection are diarrhea, which persists and is characterized rather by the frequency of the movement than the bulk of the passage, and by the circumstance that the discharge contains mucus, pus, and blood, the latter sometimes not demonstrable to the eye but always to be found. In the type under discussion neither the Shiga bacilli, the ameba, nor the tubercle are to be found, but there is usually a superabundance of colon streptococci and staphylococci. Incidentally there is usually fever and prostration.

The diagnosis is based on the symptoms as given on proctoscopic examination, which shows diffuse reddening of the rectum and sigmoid, and on the elimination by microscopic methods of the specific microörganisms known to cause dysentery. Inflammation of the colon may be acute in its onset and course at times leading to a fatal issue, or it may take a chronic course with apparent cures and recurrences.

The etiology of this idiopathic form is somewhat obscure, often no cause can be assigned, and the individual is attacked in apparent complete health. This form of colitis not infrequently follows the exanthemata of other general infections. The usual treatment in these cases should be abstention from food, the clearing of the bowels of their contents by a laxative and repeated colonic irrigations, followed by normal salt solution. The diet usually advocated after the period of starvation is one of meat, zweibach and soups, broths, or gruels. Fats are omitted and excessive carbohydrates avoided. Astringents by the mouth are usually administered, preferably some form of bismuth, and, at times, anti-

septics, particularly weak solutions of silver salts, best in the form of irrigations. These are the measures advocated by Hewes (*Boston Medical and Surgical Journal*, June 21, 1923), supplemented by complete rest in bed. He further urges that, when these measures fail and it is obvious from the symptoms, their progress, and the examination of the passage from the bowels that there is an ulcerative colitis which is not improving, there should be surgical intervention.

In the milder cases he will consent to a wait of several weeks. In the acute fulminating cases accompanied by great prostration he urges that surgery be prompt. The earliest form of intervention should be iliostomy, thus freeing the colon of its fecal content and enabling the physician to carry out efficient irrigation. Many cases under this treatment recover and the artificial opening may be closed. In others there is persistence of symptoms, and still others die in spite of the treatment.

As for mucous colitis, Hewes regards this as much commoner than the chronic infectious form and as an entirely different disease. These patients are usually of a nervous temperament and suffer as a rule from constipation with brief periods of diarrhea.

The distinction of colitis from diarrhea is dependent upon examination of the feces and use of the proctoscope. The same instrument will enable the surgeon to detect cancer if it exists in the rectum or the lower part of the sigmoid. Moreover, in its advanced form symptoms of chronic obstruction develop in neoplastic cases.

Given an ordinary infectious colitis and tubercular infection of the colon, differentiation can be made only on the basis of the laboratory findings. When these are not determinative diagnosis may not be made until the time of operation, since symptomatically tuberculous cases do not differ from the so-called idiopathic form.

In his résumé of his experience the author notes that in cases of moderate severity he has had satisfactory results after appendicostomy, and that he has been able to close this opening and stop irrigations in a year, the patient exhibiting no recurrence of symptoms. When appendicostomy has not been helpful he has resorted to iliostomy, and this he advises in all severe cases which do not yield to conservative treatment. In some cases not benefited by appendicostomy the improvement was prompt and marked after iliostomy.

The author states that "whether a complete and permanent cure of the diseased colon, a healing so complete that the colon resumes and continues its normal function after closure of the iliostomy opening, without recurrences of the disease, occurs as a result of this operation in the cases of colitis of such severity that the operation is necessary is to-day an open question. The result of my experience is that, as a rule, such a complete and permanent cure has not been accomplished.

"I have, as already stated, seen such permanent cure accomplished by appendicostomy, in the less severe type of case where we have used this operation, or by the employment of iliostomy with subsequent closure in this type of case. But in the severe type of case I have never seen this result accomplished. In many of these severe cases, under the operation, the patients have regained health and strength and been able to live in comfort as long as the iliostomy was allowed to function. But in none of my cases of this type have we been able to close the iliostomy, even after an interval of two years, without recurrence of the colitis."

EMPYEMA IN INFANCY.

It is generally accepted that empyema occurring either during the course of a pneumonia or after the clearing up of this latter condition is in infants an infection attended by a mortality of something over 60 per cent. In children of three years and over this infection is much less dangerous. The reason commonly accepted for this

high infant mortality is that, because of the difficulty of diagnosis incident thereto and failure on the part of the physician to make careful examination, or to the obscurity of symptoms, operation is postponed so long that the child has already received his fatal toxic dose before intervention is practiced.

In this relation Cameron and Osman (*Lancet*, June 2, 1923) quote Holt to the effect that in a series of 204 cases from the Infants' Hospital of New York the mortality was 74 per cent in the first year of life and 59 per cent in the second. Osman and Cameron have gone over the records of empyema in children under two years old admitted to Guy's Hospital during the years 1911-1920 inclusive. There were 53 cases in all with 13 recoveries. Resection of the rib and drainage was practiced in all of the 13 recoveries, and in 20 of the 39 which died. Failure to operate in the remaining 19 cases was incident to the fact that either the individuals were considered too ill, or the diagnosis had not been formulated. Osman holds that the high mortality reported by them, and practically all others, is not to be attributed to the failure of surgery, but rather to the pneumonic infection itself which precedes and often accompanies the empyema. Of his 13 recoveries, 12 were instances of what he calls metapneumonic empyema, meaning by this term the pneumonia itself had cleared up, but the empyema itself persisted in the form of a residual abscess in the pleura. He notes that "it is always a favorable symptom when the rise in the temperature curve due to empyema is separate from and follows after an interval the rise due to the original pneumonic infection. This disposition, which is the rule with the short-lived lobar pneumonia of adults and older children, is, unfortunately, the exception with infants. In them, as a rule, the two curves are, as it were, superimposed one upon the other and the empyema must be described as syn-pneumonic."

The cases in this group "were alike in this, that they showed no symptoms of pneumonia at the time when the diagnosis of empyema was made. High temperature, rapid pulse, urgent and distressed breathing, cyanosis, delirium, meningismus, expressionless facies, etc., formed no part of the picture. Nor was there a history of a recent and sudden onset of pyrexia. The symptoms of the meta-pneumonic empyema were less striking. The mothers, as a rule, complained of the child's wasting, of an alteration for the worse in appetite, energy, and temper, of pallor, of a persistent dry cough, or of intermittent attacks of diarrhea. When it had been recognized that the child had suffered and recovered from an attack of acute pneumonia, these indefinite symptoms were always dated from an attack and were regarded as an unsatisfactory convalescence from it. Examination showed a fretful, pale, wasted child with a normal or but slightly irregular temperature, who became dyspneic only upon exertion or after crying. In our series all of these quiescent meta-pneumonic cases recovered. All the others but one died.

"In all but one of the 19 syn-pneumonic cases submitted to operation the clinical reports record either the abscence of looked-for improvement or death within twenty-four hours. We believe that a comparison of the histories and charts of these syn-pneumonic cases with those of the meta-pneumonic cases, which all recovered, might have enabled this ill result to be predicted with confidence. One of us, knowing nothing of the other circumstances of the cases, was enabled in almost every instance to state whether recovery or death had been the result by a glance at the record of temperature, pulse, and respiration during the first days in hospital, or, when immediate operation had taken place, by noting the single record of temperature, pulse, and respiration made at the moment of admission. Moreover, it is to be noted that of 19 cases operated upon, in nine death followed within twenty-four hours of operation. Nine died at varying intervals later."

"It seems clear that the high mortality in young infants is not due to the presence

of the empyema, but to the severity and long persistence of the underlying and preceding infection. The mortality of acute primary pneumonia in the first two years of life is very high, even in the absence of the complicating empyema—66 per cent in the first year of life, 50 per cent in the second. We may conclude that those children who present themselves with a quiescent meta-pneumonic empyema have been fortunate in contracting a mild and short-lived pneumonic infection or have a relatively high resistance. In general the acute primary pneumonia of infants has a much longer course than the typical lobar pneumonia of adults, and cases of great severity often terminate fatally many weeks after the onset, even when no empyema is present. The age limits within which we find this high mortality in empyema are precisely those within which we find acute primary pneumonia of infantile type. After the third year lobar pneumonia of adult type replaces the infantile form and the prognosis at once improves. The pneumonia then has a trifling mortality, and, if empyema occurs as a complication, it tends to be meta-pneumonic in type. There is little in the study of these cases to suggest that the spread of the infection to parts remote from the lung, to the pericardium, the opposite pleura, the middle ear, the meninges, or the peritoneum, is to be attributed to the presence of the empyema, or that a more timely or more radical operation might have prevented these remote infections as complications of the empyema. Thus Goodhart and Still regard them as emphasizing 'the importance of free drainage and the danger of delay.' It may be that occasionally a collection of pus in the pleura lights up a second time a generalized septicemic infection, but the accident must be very rare, perhaps as rare as the metastasis to the brain and the formation of a pulmonary cerebral abscess.

"Certainly these additional infections, pericarditis, meningitis, otitis media, colitis, nephritis, and peritonitis, are encountered with considerable frequency in fatal cases of primary pneumonia of infancy whether empyema is present or absent."

As to the therapeutic indications derived from this important study the authors hold that meta-pneumonic empyema in infants should be operated upon by resection of the rib and proper adequate and well-supervised drainage as soon as the pneumonic process has terminated. The longer the localized collection of pus is allowed to remain the greater is the danger of fibrosis and bronchiectasis.

Bearing on these syn-pneumonic cases the authors are opposed to rib resection under an anesthetic. The pus, if present in sufficient quantities to cause pressure symptoms, should be aspirated.

The promptness with which death occurs after operation for the relief of empyema occurring in the active course of pneumonia strongly suggests that even a comparatively simple procedure such as a resection of a portion of rib under local anesthesia may be too much for a vitality greatly weakened by continued virulent sepsis. Since there is no convincing evidence that pleural effusion is an active factor in disseminating infection to remote parts, there would seem to be no strong reason for chancing prompt mortality until there is fairly conclusive evidence that the lung infection has cleared.

Progress in Therapeutics

Medical Therapeutics

Racial Aspects of Alcoholism.

In an editorial on this subject the *British Medical Journal* of April 14, 1923, states that an address, designed to introduce discussion on the differences in the distribution of alcoholism in different races, was delivered by Dr. W. M. Feldman before the Society for the Study of Inebriety. Unfortunately, perhaps because the subject was too complex, little or no discussion was forthcoming. The fact that there is a differential incidence of alcoholism among the various races was accepted by Feldman as unquestioned. The sobriety of the Jew is, he said, proverbial, and is borne out by his own professional experience. In the course of twenty years' practice among Jews of all classes he had come across not more than two or three cases of alcoholism. His patients included a number of Jews who were engaged in the sale of alcoholic drinks, but they were nevertheless perfectly sober. He also quoted some statistics of the American army in 1917-19, showing the percentages of alcoholism found among the men of fifteen different races. The Mexicans were at the bottom of the list, and the Irish at the top. The percentage among African negroes, Jews, and Italians was very small. The question was whether these wide differences in the frequency of alcoholism were truly racial in character or due to circumstances connected with environment.

Is it to be believed that there is a correlation between the inborn physical or psychological characters of a race and its tendency toward or away from alcoholism, or must the differences in sobriety be assigned to such external factors as climate, social control, and economic conditions? The answer calls for the patient coöperation of unbiased experts in several fields. It has been suggested that there is some peculiarity in the composition of the blood of the different races which alters the nervous stability so that some races fall an easier prey to alcoholic indulgence than others. This theory is no more than a vague belief; the evidence seems to be against it, for if the craving for alcohol is determined by the relative concentration of some particular hormone in the blood, it is to be expected that the same constituent would be connected with the craving for other kinds of stimulants or narcotics, but statistics fail to reveal any positive or negative correlation between alcoholism and other drug addiction. Differences of climate can hardly be responsible, for the cosmopolitan Jew is sober in all climates.

Feldman dealt in some detail with the theory advanced by Archdall Reid and others that the craving for alcohol is a hereditary character transmitted from parent to offspring, and that the drug has tended in the course of generations to weed out its addicts. It was urged by the supporters of this theory that the modern Jew is temperate because the ancient Hebrews drank to excess. Feldman denies that alcoholism was excessively prevalent among the ancient Hebrews. Nor was it the fact that Jews drank less than Gentiles. Jews drank considerable amounts of alcohol, but they did not get drunk, probably because they seldom drank alcohol without at the same time taking food with it, and because there were social prohibitions among Jews which prevented intoxication.

On the theory of selective action environment should have no effect upon the incidence of alcoholism, but the statistics of the American army show that the tendency amongst the native-born of the various races is to approach the mean for alcoholism for the whole of the United States, so that offspring of parents amongst whom the percentage of alcoholism had been high had a lower incidence of alcohol-

ism, and the converse, almost in accordance with Galton's law of filial repression. According to the selective theory, alcoholism could only be cured by the extermination of the drinker, not of the drink. Elaborate and extensive eugenic measures might ultimately eliminate alcoholism, but the remedy might be worse than the disease. Moreover, biological evidence tends to show that it is not the actual but only the potential personality which is predetermined in the germ cells.

In a brief discussion Harford said he could not believe that racial susceptibility to alcohol is something in the blood or something handed down in the germ plasm. He believes that it is determined by the habits of races. The restraining or provocative influences are social customs, religious observance, the existence of facilities for drinking, and the economic situation.

Intraperitoneal Saline Infusion.

In the *China Medical Journal* for March-April, 1923, CHANG states that the intraperitoneal injection of salt solution into dehydrated patients has been a widely used therapeutic measure in recent years. Brown tried it in Baltimore about twenty-six years ago. Garrod used it as a routine treatment in his service at St. Bartholomew's Hospital, London. It was, however, not generally adopted by American practitioners until the publication of the paper by Blackfan and Maxcy in 1918; since then it has been found to be a very valuable procedure in the treatment of the severe nutritional and gastrointestinal disorders of infants, especially when the diarrhea and vomiting are so severe as to prevent the administration of water by rectum or by mouth. While the method was originally employed in the nutritional disturbances of infancy, its usefulness has been extended to many other conditions not only in infants but also in adults, where the parenteral administration of fluid is urgently indicated, such as in cholera, dysentery, and other diseases.

As claimed by Blackfan and Maxcy, the advantages of the direct injection of water into the peritoneal cavity are several in number. In the first place, the absorption of isotonic salt solution from the peritoneum is so rapid as almost to equal the efficacy of intravenous injection; this fact was demonstrated by the experiments of Dandy and Rowntree, who found that from forty to sixty per cent of phenolsulphonephthalein in solution was absorbed in one hour. In the second place, it admits of the administration of a comparatively large amount of fluid at one time and permits of repetition at frequent intervals. Furthermore, the technique of the method is practicable and simple. As to the attendant risk to the patient, it is minimal if great care in technique is exercised. Findings at necropsy and experimentation with animals have proved that it is practically impossible to perforate the bowel by the sudden insertion of a needle through the abdominal wall.

While this method of treatment is indicated in almost every case of marked dehydration, it is not to be attempted when such a contraindication as distention of the abdomen has not been relieved, or when the urinary bladder is full.

The technique of the treatment is as follows: The patient lies in the recumbent posture. The most favorable site for the introduction of the needle is through the linea alba just below the umbilicus. The area of injection is aseptically prepared. The skin and subcutaneous tissue are picked up between the thumb and the index-finger, and the needle, pointing upwards, is inserted at an oblique angle. After penetration of the peritoneum the fluid is allowed to flow in slowly. The injection is continued until the abdomen becomes slightly distended; the amount, varying from 500 cc to 2500 cc or more, should depend on the size of the patient, care being taken not to embarrass the respiratory and circulatory systems. After the introduction of the fluid, the needle is withdrawn and the puncture wound covered with a sterile dressing. If necessary, the injection may be repeated

after twelve to twenty-four hours. Aseptic precautions should be observed during the operation. Sometimes a temperature ranging from 38° C. to 39.5° C. may ensue within three hours, but this soon subsides.

He concludes that the use of the intraperitoneal injection of normal salt solution may be warmly advocated. It has been shown to be simple, effective, and devoid of danger. His limited experience in the use of this method has corroborated all that is claimed for it. Three of the four cases treated improved remarkably. The death which occurred in the second of the series was purely coincidental and was not caused by this treatment.

Chang reports his case not with the idea of making any special scientific contribution to the subject, but (1) to submit this procedure to the consideration of the medical practitioners of China, and (2) to report a case with death following intraperitoneal infusion in which an autopsy demonstrated the absence of any connection between this therapeutic measure and death.

A Clinical and Biochemical Study of Neurosyphilis.

In the *American Journal of Syphilis* for April, 1923, CORNWALL and MYERS present the following questions, to which they would seek answers:

1. How much arsenic appears in the spinal fluid after intravenous administration of silver arsphenamine?

2. How rapidly does arsenic enter the spinal fluid and how rapidly is it eliminated?

3. Does spinal drainage influence the arsenic content of the spinal fluid?

4. Does the amount of arsenic vary with the type of pathologic lesion?

5. Do age and occupation influence the arsenic content of the spinal fluid?

6. Does the method of administration of the drug have any influence on the arsenic content of the spinal fluid?

7. Is there any relation between the amount of arsenic in the spinal fluid and in the neural tissues?

8. At what intervals after intravenous administration do the spinal fluid and neural tissues contain the greatest amount of arsenic?

9. What effect, if any, upon permeability has the repeated intraspinal administration of silver arsphenamine?

10. Does arsenic ever accumulate in the spinal fluid to the point of danger?

11. How much arsenic is administered intraspinously by the Swift-Ellis method?

12. What is the optimum period after the intravenous administration of silver arsphenamine to withdraw blood?

13. How does the amount of arsenic in whole blood serum and clot compare?

14. How soon after the blood is drawn should the serum be separated?

15. Can the permeability of neural blood-vessels to arsenic be influenced by physical or therapeutic factors?

16. Is there any relation between the arsenic content of the spinal fluid or neural tissues and the symptomatic progress?

17. Is there any relation between the arsenic content of the spinal fluid or neural tissues and the pathology (cytologic, serologic, or chemical)?

18. What is the relation between total solids and the arsenic content of the spinal fluid? Between the total solids and other fluid pathology?

19. What is the relation between the total solids and the neural tissue pathology?

20. What is the relation between the total solids in the spinal fluid and the symptomatic progress?

21. How does therapy influence the total solids in the spinal fluid?

The results, embodied in this report, are limited almost exclusively to a group of cases that were receiving silver arsphenamine intravenously. Specimens of spinal fluid were obtained from two to ninety-six hours after the intravenous administration of the drug.

With a few exceptions none of the cases received, during the period of study, any intraspinous injections of auto-arsphenaminized or fortified serum. The amount of fluid withdrawn varied from twelve to

thirty cubic centimeters, therefore the technique was essentially that of spinal drainage.

From a review of their results, which include the examination of 239 spinal fluids taken from 151 patients after the intravenous administration of silver arsphenamine, they infer the following facts to be proved:

1. Arsenic passes into the spinal fluid.

2. Arsenic can be found in the spinal fluid at the end of two hours in an amount as large as 143 mgm. per 100 gm. of dried specimen.

3. Arsenic can be found in the spinal fluid as late as seventy-two hours in an amount as large as 192 mgm. per 100 gm. of dried specimen.

4. In general the arsenic content in the spinal fluid falls after the first two hours. It rises slightly between twenty-four and forty-eight hours, and at the end of seventy-two hours is present in greater quantity than at any time between two and seventy-two hours. This statement is applicable only in the abstract and does not hold true equally for all types of neurosyphilis. This point together with additional analytical features of the results will be discussed in a later publication.

High and Low Enemata—A Mistaken Conception.

In the *Boston Medical and Surgical Journal* of April 12, 1923, ELLSWORTH and WHEATLEY state that as roentgenologists they have had occasion to observe, by the fluoroscopic method, a large number of enemata, and the ease with which the entire colon, and very frequently the lower portion of the ileum, are distended by a properly given enema, has impressed them so much that they feel that the effort on their part to correct the present state of misinformation will be of decided value.

They find that most patients can receive nearly two quarts of fluid by rectum with very little or no discomfort or even sensation, if given properly, and that it is possible to cause extreme discomfort and to fail to fill more than the rectum if given according to the directions furnished by most of the nurses' training schools.

Under the fluoroscope, they have inserted the rectal tube to a distance of eight inches and attempted to fill the colon, without success, apparently because of the fact that the presence of the tube so high in the colon produces a muscular contraction which prevents fluid from entering the sigmoid. When the tube is withdrawn so that it projects only slightly beyond the internal sphincter, the spasm relaxes and the enema is successfully administered. They have attempted to use pressure produced by elevating the reservoir to a distance of four feet, and have observed that the increase in pressure defeats its own object by producing a rectal spasm and an immediate desire to defecate. Attempts to insert the tube more than six inches usually result in simply producing a coil of tubing in the rectum. It is practically impossible, without the fluoroscope, to determine whether the tube becomes coiled or whether it enters the sigmoid. In any case there is no advantage to be gained by inserting the tube far beyond the internal sphincter, because whether it coils or not it acts as a foreign body and produces spasm and discomfort.

The method they have found to be most satisfactory is to have the patient lying face down, the tube inserted just beyond the internal sphincter—usually about three inches—and the solution, heated to body temperature, given slowly with a pressure produced by not more than eighteen inches elevation of the reservoir. When the patient feels any discomfort, it is wise to stop the flow until the sensation has passed. Many times it is possible to fill the lower portion of the ileum with the patient feeling only the sensation produced by the presence of the rectal tube. Other times the patient will feel the sensation produced by dilatation of the rectum, but if the flow is stopped immediately this sensation soon passes off and the enema is allowed to con-

tinue. They have found that the position of the patient face down is possibly slightly better than on his back, because of the ease with which the tube is inserted and because of the fact that apparently the pressure produced by the patient's weight on his abdomen helps to obscure the sensation of a slowly dilating colon. It is easy to understand why the prone or supine position, where the plane of the colon is horizontal, is better than the position on either side. When the left side is down, the fluid has to ascend the vertical transverse colon to the hepatic flexure. When the right side is down, the fluid has to ascend the tortuous sigmoid and reach the level of the splenic flexure. Without *x*-ray control, unfortunately, we cannot be certain when the entire colon is filled, but as a rule a normal adult colon will contain nearly two quarts of fluid before it becomes distended. If the amount injected does not exceed one quart, and further injection produces discomfort, it is probable that only the rectum and lower sigmoid are filled. In these cases a delay of five minutes oftentimes relaxes the spasm which is responsible for the difficulty, and the second quart can be easily injected. When the enema is given properly, the authors find that the patient has very little trouble in retaining the solution during an extended fluoroscopic study, and while radiograms are being made. This time often exceeds twenty minutes, and except for an occasional and fleeting desire to defecate, the patient experiences no difficulty.

The opaque enema is a very essential method of diagnosis of diseases of the colon. Many times patients will protest when told that an enema is to be given. They will state that they have never been able to retain even a cupful of water and look forward to the procedure with great apprehension. They are pleasantly surprised when they are told that the entire colon is filled, and often state that they experienced no discomfort whatever.

These authors feel that the enema is an extremely valuable method of cleansing the lower portion of the alimentary canal and that it should be a more frequently used method of administering therapeutic measures. Its use at present, they believe, is restricted partly because of the unsatisfactory results of faulty administration. They believe that if it were generally known that the entire colon can be filled in practically every case without discomfort or even disagreeable sensations to the patient, the enema would be a more common procedure.

Mercury Inhalation Therapy of Syphilis —Shall It Be Condemned?

GUTMAN, in the *American Journal of Syphilis* for April, 1923, states that evidence is presented which contradicts the allegations of Cole, Gericke and Sollmann regarding the utility and effects of mercury vapors in the treatment of syphilis.

Evidence is submitted to prove that the respiratory tract is a desirable route for the administration of all drugs effective upon the general organism, especially mercury, because: (*a*) The absorptive area of the respiratory tract is enormous, many times greater than the external surface of the body; (*b*) the very dense capillary network of the pulmonary tissue and its immense quantity of blood, renewed more frequently than that of other capillaries, favor immediate transportation of absorbed vapors; (*c*) the very thin partition (two endothelial cells) between vapors in the alveolar spaces and the blood in capillaries favors rapid diffusion; (*d*) the ready vaporization, the nascent state and the peculiar molecular construction of mercury—all favor rapid diffusibility, absorption, and effectiveness.

Physiological data have been offered to prove that inhaled mercurial vapor is absorbed almost entirely from the respiratory and not the gastrointestinal tract.

Evidence has also been submitted which proves that inhaled vapors are not toxic or harmful to the respiratory tract; also that mercury inhalations are still in use.

In the same journal in an article on

"Mercury versus Arsphenamine in the Treatment of Syphilis," Gutman states that the newer preparations of mercury, in spite of claims of their low toxicity, blandness, non-corrosiveness, non-irritability, etc., are nevertheless, in actual practice, found not to be as faultless or pleasant as we are led to believe nor as efficacious as desired.

In a previous paper he has mentioned the unpleasantness of the inunction method, its unreliability and indefiniteness of absorption. He also called attention to the painful procedure and the unsatisfactory absorption of intramuscular injections. But even the intravenous method is not without faults; the isotonic, the use of presumably well-sterilized and nicely marketed preparations, has been accompanied, even in the hands of the experienced, by many untoward by-effects which indicate the need of great caution. It is not suggested that inhalations are faultless and that all methods of mercury administration are to be discarded for them; rather is it intended to point out that the other methods are also not faultless and that inhalations, though imperfect as yet, have many advantages deserving attention. First among these, inhalations are free from the nauseous taste and the unpleasant gastrointestinal disturbances occurring with oral administration; second, their absorption is rapid—as rapid as any other method of mercury administration, not excepting the intravenous or subcutaneous; third, compared with inunctions, they have no unpleasant unesthetic features, such as the soiling of clothing and linen, etc.—they are definite in dosage and absorption; fourth, they never cause serious symptoms or fatalities, such as often accompany hypodermic injections of mercury or arsphenamine; fifth, if administered in proper dilution they cause no unfavorable local symptoms in the respiratory tract; sixth, if administered in a manner devised by the author, the dosage and absorption are absolutely controllable and can be made exact.

On all these accounts it is claimed that the administration of mercurial vapors as compared with the other methods is comparatively simple, free from pain, discomfort, or unpleasantness; in the form of vapor mercury may be administered without disagreeable complications; the vapors are readily absorbed and strongly effective.

Arsenic Content in the Blood at Various Intervals After Intravenous Injections of Salvarsan.

FORDYCE, ROSEN and MYERS, in the *American Journal of Syphilis* for April, 1923, state that this study is the first of a series on the amount of arsenic in the blood, urine, and spinal fluid after injections of salvarsan, neosalvarsan, and silver salvarsan. It is limited to an analysis of the blood after intravenous injection of salvarsan and resolves itself into the following questions:

1. When is the largest amount of arsenic found in the blood after such injections?
2. What amounts are found at varying intervals?
3. How long after the cessation of treatment can arsenic be detected in the blood?
4. Does the amount of arsenic found in the blood have any bearing on reactions and complications following treatment?

In a previous contribution on the normal arsenic content of the body fluids they have called attention to the fact that arsenic can be detected in the blood of individuals who have never received arsenic as such medicinally; its sources being dietary, occupational, drug contamination in preparations taken internally and used externally, and other unknown factors. In the consideration of the present problem they had to bear these facts in mind as a possible explanation of apparent discrepancies. They made no attempt in their early studies to discover possible adventitious sources, and have made their calculations on the known amount of the drug injected into the patient.

The analyses were made on blood obtained from patients in the various stages of syphilis, and from a control group of non-syphilitic cases who had never had any treatment for this disease. The majority of the syphilitic patients were treated ac-

cording to the method employed at the Vanderbilt Clinic, namely, two or more courses of eight intravenous injections of salvarsan by the gravity method at weekly intervals, unless they were in the primary or early secondary stages, when they were treated more intensively—that is, the first three injections every other day, and the remaining five at five- and seven-day intervals. Rest periods covered from four to twelve weeks. Old cases of neurosyphilis, after the third or fourth course, received injections at longer periods, namely, four, six, or eight weeks. Mercury salicylate was also given intramuscularly in courses of twelve to fifteen injections at weekly intervals. At no time was mercury given intravenously. Potassium iodide was administered to the latent and tertiary cases. Many of the patients did not adhere to the plan outlined, but these are the usual difficulties met with in a large clinic.

In summarizing their study they state:

Analysis of blood taken immediately after the completion of the injection showed that 60 per cent of the arsenic injected has been localized outside of the blood stream.

The maximum quantity of arsenic in the blood stream based upon average values is found immediately after injection. This value expressed in milligrammes of metallic arsenic per 100 grammes of dried specimen is 4.21.

Observations at later intervals up to one day indicated that the arsenic equilibrium in the blood gradually becomes lower, based on average values.

There was a marked increase in arsenic after a period of one day with a gradual diminution at later intervals, based on average values.

These results were based on the average of all types of patients in all stages of the disease.

Certain individuals having an arsenic idiosyncrasy or predisposition to arsenical intoxication show abnormal values both high and low for any given interval (partition coefficient).

Through these analyses it is hoped that a suitable interval for securing blood in the Swift-Ellis method of procedure can be selected and tending to standardize the procedure.

It is apparent that certain cases have a high "partition coefficient" making difficult the selection of the most suitable interval for obtaining the salvarsanized serum.

Rapid localization of the drug may be a warning for certain latent arsenical intoxications.

It is observed that there are two well-defined groups of individuals responsible for irregularity of arsenical fluctuations in excretion and retention after intravenous injection of salvarsan. These may be classified as "short period" and "long period."

Variations of arsenic content and "possible" variation of therapeutic activity were eliminated by using the same control number of the drug throughout the entire investigation.

It was observed that the rate of partition between blood and tissues varies with individual patients, and on this basis the efforts in bringing about arsenic saturation in an individual demand careful observation of the patient.

Clinical discussion will be found in the succeeding articles dealing with the determination of arsenic after the intravenous administration of neosalvarsan and silver salvarsan.

Pituitary Secretion.

In an editorial on this subject the *British Medical Journal* of April 28, 1923, states that although extracts of the posterior lobe of the pituitary gland are now widely used in obstetrics and in surgery, knowledge of the functions of this gland is still very fragmentary. This is in large measure due to the extreme difficulty of removing the posterior lobe of the pituitary without injuring the anterior lobe or the adjacent portion of the brain. The known actions of pituitary extract are extremely diverse, and this is understandable since the gland is known to yield several active principles. Abel and Rouiller showed that at least two substances were present, one which raised and

another which depressed blood-pressure. Dudley in a recent paper has shown that the substance which raises blood-pressure is probably distinct from the substance which causes constriction of the uterus.

Very little evidence has been brought forward to indicate the nature of the relation between the pituitary gland and the genital organs, but W. E. Dixon in a recent paper has thrown some light on this question. He has made a series of experiments which lead him to conclude, first, that secretion of the pituitary gland is delivered into the cerebrospinal fluid, and secondly, that this process of secretion can be stimulated by injection into the circulation of either pituitary extract or of ovarian extract. It seems clear, he says, that "ovarian conditions determine the secretion of the pituitary and thus react indirectly on the uterine tonus. Pituitrin is very largely employed in medicine to contract the uterus: its employment would seem to be rational in that it is the drug manufactured by the body for this specific purpose."

The facts established concerning the functions of the posterior lobe of the pituitary indicate that they are curiously scattered. The internal secretion of this gland appears to be essential to the normal function of the kidney, for injury to the lobe is often associated with diabetes insipidus, and in a large proportion of cases of this disease the excessive urinary secretion can be inhibited by the administration of pituitary extract. Furthermore, Starling and Verney have recently shown that the isolated kidney secretes very dilute urine, but that the addition of pituitary extract to the perfused blood causes an increase in the concentration of the chlorides. The pituitary is also one of the glands that control the concentration of blood sugar. Pituitary deficiency is associated with increased carbohydrate tolerance, and according to Burn pituitary extract has a stabilizing effect on the blood-sugar concentration, for on the one hand it inhibits the hyperglycemia produced by adrenalin or by ether anesthesia, and on the other hand it inhibits the fall of blood-sugar produced by the administration of insulin.

There seems, therefore, to be a fair amount of evidence that the posterior lobe of the pituitary gland secretes *in vivo* a uterine stimulant and also a substance essential for normal urinary secretion.

This gland contains in addition substances which can raise blood-pressure, which can lower blood-pressure, and which affect blood-sugar concentration. There is evidence that at least three separate substances are concerned in these manifold activities. We have, however, at present no evidence as to whether these curiously diverse activities are correlated in any way; as far as our present knowledge goes, the association of the different active principles in one gland may be purely accidental.

The Treatment of Angina Pectoris.

ALLBUTT, in the *Lancet* of May 5, 1923, states that his principle of cure in angina has been, and still is, to treat the case as if it were one of aneurism—namely, by absolute rest of a duration proportionate to the severity, and the stubbornness, of the case. In a recent case of great intensity and tenacity, in a man of about sixty-five years of age, by this method cure has now been established. Not many patients are able, if willing, to betake themselves to bed and to immobility for weeks or months, but those so able have their reward. The patient of whom he speaks suffered for the first few weeks so intensely that the mere opening of his bedroom door often brought on an attack; and many were his seizures both by day and by night. He was put to bed; his natural wants were served by the bedpan, his food was made simple and soft, and was carefully administered. Brave, faithful and hopeful through a first period of incessant suffering, he then began to feel some mitigation of the attacks in degree and frequency; and after five months of immobility he found himself able gently to move about, and so by degrees to return in a quiet way to his ordinary life. He has not had an attack for a long time past; the sore of the aorta was healed.

Happily few cases need so long a re-

straint as this; few patients perhaps have the easy mind, and the means, the strength of will, and the mental resources, to sustain them through such a discipline. The patient is allowed to read peaceful books and journals, but not to play games nor to entertain guests. Pratt kindly wrote to him to say that for ten years past, in cases of angina pectoris, he had followed his method of complete rest with excellent results. There are, of course, many other means, such as the nitrites, to be used as subsidiary to the main purpose; and Allbutt has recommended a liberal use of atropine to ward off vagus arrest. But the principle of treatment he has advocated is simplicity itself—namely, so much complete rest, with due modification of diet, as may be required for the healing of the injured vessel. Treat angina pectoris then as one would aneurism, but with far brighter hope of a successful issue. Of the results of Jonnescu's operation of cervical sympathectomy, in order to throw the aortic afferents out of gear, he knows nothing; but the proposal is a reasonable one.

The Treatment of Vascular Nevi with Radium.

In the *American Journal of Diseases of Children* for May, 1923, RULISON and MCLEAN state that in their experience the disadvantages and advantages of radium in the treatment of angiomas are these: Radium therapy is expensive and time-consuming—both because of the necessity of individual treatments and because of the long intervals between treatments. There is also the chance of overtreatment, with subsequent ulcer formation and very tardy healing. The possibility that telangiectasia and an atrophic skin may result, followed later by keratosis and epithelioma, has also to be considered.

The advantages of radium treatment are the freedom from pain, the very gradual changes in the lesion which can be watched from treatment to treatment, and the probability of causing the lesion to disappear without appreciable damage to the skin. In addition, there is the advantage of rapid healing of ulcerations and hemorrhagic areas, the absence of scarring, under favorable conditions, or, when scarring is unavoidable, the production of a smooth, supple and comparatively inconspicuous scar. It is possible to treat successfully lesions that because of their location are not suited to other procedures—for example, nevi of the eyelids—or others on account of their depth and extent. Most potent of all reasons for using radium in treating angiomas is the fact that radium exerts a definite, specific, selective action on the abnormal endothelial cells lining the blood-vessels which are at fault in the process. Apparently this is not true of any other therapeutic agent at our command.

Not all angiomas respond equally well to radium treatment. The port-wine mark is very obstinate, since flat nevi generally are more refractory than the raised. Many nevi of small size and situated on covered parts are easily destroyed by more rapid methods.

The scar following the skilful use of carbon dioxide snow is often insignificant. Telangiectasia, classed as nevi, is better treated by electrolysis. Surgery often gives brilliant and rapid results.

In certain selected, raised vascular nevi of the face, radium therapy yields results which probably cannot be achieved by other methods, especially if the treatment is commenced in early infancy.

Liver Abscess.

LUDLOW, of Seoul, Korea, in *Surgery, Gynecology and Obstetrics* for March, 1923, states that among the operative procedures advocated for abscess of the liver are the following:

Aspiration Method.—This may be done by means of a trocar and cannula with a rubber tube for drainage. This method was used with success by Manson. Some of the disadvantages are: (1) Open operation frequently has to be resorted to after aspiration has failed. At times, however, this is not a great objection, for the patient may

in some cases be relieved and gain strength. (2) Difficulty of retention of tight-fitting cannulas or stiff rubber tubes, on account of the constant movement of the liver. (3) The pus is sometimes not discovered by aspiration or may be too thick to flow through the cannula.

Treatment by aspiration together with the use of emetine seems to promise good results; at least some of the late reports would so indicate. DeBellard, in the *Cacete médica de Carácas,* February 15, 1919, reported two cases of liver abscess treated before operation with subcutaneous injections of 0.04 grain of emetine morning and evening for four days. He then aspirated the contents of the abscess and injected 0.15 grain of emetine in 30 cc of distilled water into the abscess cavity. Both cases are reported cured.

Rogers, in the lecture above noted, states: "In patients coming first under observation with an already formed amebic abscess, whenever possible, the treatment of choice should be repeated aspiration and subcutaneous injection of emetine in preference to incision, while when such an abscess has eventually to be opened some form of sterile siphon drainage should be used. A little over a decade ago liver abscess was second only to typhoid in its lethal effects on the British soldiers in India, causing nearly 100 deaths a year among them, but the death-rate has already been reduced to one-sixth by the method which I have advocated." In his first two series (60 cases) he resorted only to operation by the open method, although in many cases, perhaps a fourth, subcutaneous injections of emetine were used.

In 1919 Ludlow tried two cases by the method advocated by DeBellard. In the first case he was able to obtain only a small amount of pus by aspiration—about 200 cc. Later he operated and evacuated 2000 cc of very thick pus. In the second case he aspirated 300 cc of pus, but had to operate four days later and obtained 1000 cc of very thick pus. In neither case did the emetine seem to thin out the pus.

Since his return from furlough he is trying again the aspiration method in cases not in this series, with promise of good results.

Method of Approach Through Abdominal Incision.—In this operation as usually performed, incision is made in the epigastric region or right rectus, the liver is fixed to the abdominal wall by rows of sutures through its capsule, and the peritoneal covering to the edges of the abdominal incision. The opening is maintained by packing, and the incision of the abscess delayed twenty-four to forty-eight hours. The disadvantages of this method are: (1) two operations are necessary; (2) drainage is not so good; (3) the stiches are liable to pull away and infection of the abdomen may occur.

Transthoracic Method.—In his book on Tropical Medicine, Jackson writes: "If there is bulging between the ribs we may expect the abscess to have for its coverings the diaphragm and the pleural layers. These will require stitching together in order to prevent the escape of pus into the pleural cavity. A resection of one or two ribs must precede this stitching. This done the abscess may be opened by an incision through pleura and diaphragm. Deep-seated abscesses should rarely be approached in this way as the steps of rib resection, uniting the diaphragmatic and the parietal pleural layers, anchoring of the liver to the wound and incision of the hepatic peritoneum, are all preliminary to the search for pus within the liver substance. The situation of the liver at the bottom of a deep recess, its movements to and fro, unite to make this a deservedly unpopular operation."

The point of election for the large majority of his operations has been the ninth rib, about 2 inches from the costal margin on the right side. At this point the pleura is rarely encountered, and Ludlow has found the technical operative difficulties mentioned by Jackson not at all troublesome at this site.

Ludlow's own plan is based on the view that each case of liver abscess must be treated according to the findings and that

no hard and fast rule can be made for every case. The following, however, may be given as the general plan which he has used in most cases:

A preliminary treatment by emetine subcutaneous injections of 0.06 grain is given daily for two to four days provided the patient's condition will permit of that much delay. During this time he also deals with the intestinal parasites so frequently present.

In his first two series the aspirator was employed for diagnosis only, and used when the patient was brought to the operating-room and all was in readiness to proceed with the operation. Many cases have been aspirated for diagnosis before coming to his service, and he is inclined to put less emphasis than formerly on the dangers of aspiration.

Ludlow usually gives a preliminary dose of morphine, 0.06 grain. The aspirator is inserted under local anesthesia. If the patient's condition is serious it is wise to attempt the operation under local anesthesia. Local anesthesia (novocaine ½ per cent) with gas and oxygen would be ideal, but he has had no means as yet of using gas anesthesia. Only positive findings with aspirations are of value. In certain cases in which the existence of an abscess is strongly suspected, he has operated after failure to obtain pus by aspiration and has each time evacuated a large abscess filled with thick pus. Lately when the diagnosis has seemed certain he has operated without use of the aspirator for diagnosis.

If a general anesthetic is necessary, ether is preferable and must be used with great care, and as little as possible must be given.

The incision of election is made parallel to the ninth rib, beginning about two inches from the right costal margin and extending outward. A portion of the rib two or three inches long is resected, the diaphragm incised, and the liver exposed. A small incision is made in its capsule, blunt scissors are inserted into the abscess cavity, and the wound is enlarged by opening the scissors and drawing them out. During this last procedure the patient is turned a little to the right. As soon as the cavity is opened the first finger of the left hand of the operator is inserted, and the liver held close to the wall while the pus is allowed to escape. After most of the pus has been evacuated, the first finger of the right hand may be inserted into the cavity and search made for any other compartments of pus or large masses of thick pus scooped out. When he first began to operate upon these cases, an attempt was made to sew the liver to the parietal peritoneum. The stitches would frequently tear away even before the operation was finished. He gave up this procedure and found no ill effects resulting. In only a few cases did he ever encounter the pleura, and this was easily sewed with no bad results. After most of the pus is evacuated the cavity is packed with gauze which is left undisturbed for two days. After this the abscess is drained with a rubber tube and gauze. He has used both Dakin's and hypertonic saline solutions for irrigation. Neither solution has hastened the healing to any marked degree. Dakin's solution does, however, dissolve the thick pus and make it run easier.

The injections of emetine (0.06 grain daily) are continued for four days after operation, or a week or more longer if there are symptoms of active dysentery. He has also used trimethol, now called diniol, as an intestinal antiseptic.

In large abscesses, after the pus has been evacuated and the liver begins to contract, the drainage has at times been interfered with by the changed position of the liver. It is necessary to keep a good opening for drainage. If this is left to an assistant, unless he is well instructed, he is apt to allow the external opening to close too quickly. In three cases the ends of the divided ribs became infected and required secondary operation. Ludlow now covers the ends of the divided rib with periosteum.

Abdominal Incision.—In cases in which the abscess has ruptured into the abdomen, in his series, the operation consisted of drainage at the lowest point, even though it required a second incision. Where the abscess has not ruptured but the liver projects into the epigastric or hypochondriac

region, he has proceeded according to the method mentioned above in "The Approach Through the Abdominal Incision," except that he has opened the abscess at the time of the operation. In several cases he has combined the abdominal incision with that of the ninth rib.

Cupping, Dry and Wet.

In the *British Medical Journal* of April 14, 1923, GUBB urges recourse to cupping in suitable cases. In pneumonia, in congestion of the lungs, in bronchitis, in pleurisy, in lumbago and sciatica, great and immediate relief can often be afforded. It is easy to apply: half a dozen thick-rimmed kitchen tumblers—nothing can be better—a little cotton-wool or spirits of wine. If cotton be selected (the patient must be sitting up straight in bed) a loose tuft is placed at the bottom of the tumbler, and when everything is ready a match is applied to it and the open end of the tumbler is sharply pressed into the chest wall. There is no fear of a burn if the patient be sitting straight up. It is important not to place the tumblers on loose tissue (such as the anterior abdominal wall), and they must not be placed too near to one another, otherwise they are apt, when the skin is drawn up, to pinch it very disagreeably. They are left on for five or ten minutes, and are removed by depressing the skin with the nail so as to let in air, whereupon the tumbler falls off. The skin is then dabbed dry and dusted with talc—never rubbed. When wet cupping is contemplated the skin of the back must be thoroughly washed with soap and water, then rubbed with methylated spirit or a weak solution of iodine before applying the scarificator as well as after. Then the tumbler with the lighted cotton is placed over the scarified spot.

Some people use spirits instead of cotton, and as a matter of fact it gives better results, though it is attended by one or two risks against which one has to be on one's guard. A teaspoonful of spirit is poured into the tumbler and is swished round so as to moisten the sides. It is then poured out to the last drop, and a band an inch or so deep near the rim is wiped dry on the inside of the glass all round, so as to prevent the flame approaching the skin. The glass, held in the right hand, is gently rotated so as to prevent the formation of drops, a match is applied, and it is quickly placed on the skin and firmly pressed. All danger of a burn is avoided (1) by having the patient seated bolt upright, (2) by keeping the tumbler rotating until ready to be applied, and (3) by having a towel handy to extinguish the flame in the event of a drop of lighted spirit falling on the sheet.

The Treatment of Primary or Spasmodic Dysmenorrhea.

BLACKER in the columns entitled "Modern Technique in Treatment," in the *Lancet* of April 21, 1923, states that in any severe case of primary or spasmodic dysmenorrhea the first and most important thing is for the patient to go to bed. If this is impossible it is much more difficult to obtain relief from the pain. Warmth should be applied to the lower abdomen and back by means of hot-water bottles. If possible, the patient should be put into a hot simple or mustard hip bath, or small enemata may be given as hot as can be borne and retained as long as possible. These may be simple enemata of hot water alone, or may contain such drugs as potassium or sodium bromide 20 to 30 grains, chloral hydrate 20 grains, chloretone 10 to 15 grains, especially when vomiting is a marked symptom, or antipyrin 15 grains, suspended in a small quantity, say 4 ounces, of hot mucilage of starch.

In the treatment of the pain by the internal administration of drugs most reliance is to be placed upon the coal-tar derivatives, such as antipyrin, phenacetin, or aspirin in doses of 10 to 15 grains of each, or pyramidon 5 to 8 grains. Acetanilid has so often given rise to poisonous symptoms that it should not be employed.

These drugs should be combined with small doses of caffeine citrate, in the strength of one grain to every five grains of the drug ordered, to lessen their depressant effects.

One of the most successful methods of treating these cases is by the administration of atropine. Atropine has a markedly sedative effect upon the movements of the stomach and intestine; after small quantities of aperients the normal peristaltic action is not affected, but the griping pains resulting from large doses or from the more violent purgatives are absent if atropine is given along with them. The same sedative effect is seen in the case of the uterus, and here again the drug acts best when the muscular contractions are irregular and excessive. It is not surprising then to find that the administration of atropine produces good results in the treatment of primary or spasmodic dysmenorrhea. The treatment should be commenced some few days before the expected onset of the period, and 1/100 gr. may be given in tablet form three times a day; the dose may be increased if necessary, provided the patient tolerates the drug well. Benzyl benzoate has been suggested as a drug possessing a similar action to that of atropine and as less likely to produce toxic symptoms. It may be given in the form of an emulsion as follows: benzyl benzoate 15 gr., mucilage of acacia 1 drachm, aromatic elixir 1 oz., in a dose of one-half to two drachms every two hours as required. Many other drugs have been recommended and are still used in the treatment of dysmenorrhea—for example, apiol, hydrastis canadensis, viburnum prunifolium, gelsemium, cimicifuga, pulsatilla, cannabis indica, and others. The three drugs which should never be ordered if they can possibly be avoided are alcohol, morphine, and cocaine. Alcohol undoubtedly has a considerable effect in relieving the pain, and it is an old-fashioned remedy, but the danger of establishing the practice of drinking is so grave that it should never be ordered, and the same warning applies to morphine. If it is necessary to give the latter drug—and at times the pain is so intense that it must be used—then it should be given as a hypodermic injection only. In cases in which ordinary remedies fail and the pain is not so severe as to require morphine for its relief, it is permissable to give small doses of opium in such a prescription as the following: potassium bromide, 15 gr.; ammonium carbonate, ½ drachm; tincture ginger, ½ drachm; peppermint water, 1 oz., two tablespoonfuls to be given when the pain is severe. In highly strung neurotic patients the combination of one or other of the bromides with some of the antispasmodics mentioned is often useful.

[It is to be recalled that many physicians believe that aspirin increases the menstrual flow and that a woman when menstruating is more prone to collapse on the use of antipyrin and acetphenetidin than under ordinary conditions.—Ed.]

High Blood-pressure and Its Treatment.

Henderson, in the *Glasgow Medical Journal* for April, 1923, states that in view of the fact that some degree of high pressure is to be regarded as compensatory it should be emphasized that the mere discovery of high pressure alone, without associated symptoms, should not be taken as an indication for its immediate reduction. Much harm may be done by the indiscriminate lowering of pressure. It is more important, at least at the outset, to employ means to prevent its rising further. The possible causal factors in operation should be reviewed, and much may be done by regulation of diet, bowels, and exercise. The intake of food, and especially of fluids, should be restricted. Meats, if given, should be in strict moderation—indeed, some cut them out altogether. No highly-seasoned or spiced foods should be allowed, and no alcohol or strong tea or coffee. The use of salt also is forbidden by some. Purgation is useful, more especially if drugs are chosen which remove large quantities of fluid, such as calomel, jalap, and elaterium, with morning salines. Complete rest in bed must be enjoined when there is evidence of cardiac distress, and this of

itself usually lowers pressure for the time being, but in most cases what is required is relative rest. A moderate amount of exercise suited to the individual patient may be allowed—indeed, should be encouraged. Mental and nervous overwork like physical overexertion should be avoided. This is easy to prescribe, though often difficult for the patient to carry out. The development of some quiet hobby should be encouraged as a distraction from worry. Venesection is very useful as a temporary measure in a crisis or when drugs fail. Increased elimination by the skin and lungs is a valuable aid, and can be secured by means of carefully regulated hot baths.

So far Henderson has made no mention of drugs, as their action in most cases, so far as lasting results are concerned, is uncertain. In any case it is not advisable to rush to vasodilators too early, or to push them too strenuously, as some measure of high pressure is often a compensatory necessity. No drug has a specific action in this regard. For a sudden lowering effect probably amyl nitrite or nitroglycerin gives the best result, but the action is not sustained. Sodium nitrite is the drug which is most in favor for continuous use in lowering pressure, and, in his experience, gives the best results. The official dose is up to two grains, but frequently to get the desired effect it must be employed in larger dosage, say up to three, four, or even five grains several times daily. Occasionally it may be thought advisable to bolster up its action by the use of a nitroglycerin or trinitrin tabloid at night in addition, and this is often valuable in securing sleep in such cases. Sodium nitrite may often be combined beneficially with a diuretic or diaphoretic to secure increased effect in elimination. Erythrol tetranitrate (½ to 1 grain or more) and mannitol nitrate (1 grain or more) are both recommended as having more lasting effects, especially the latter, which has also the advantage of being cheaper than the erythrol preparations. Achard, of Chicago, reports favorably on the use of veratrin and mistletoe for sustained action in lowering pressure. The latter Henderson has tried to some extent, both for this purpose and as a diuretic, without satisfactory result. Potassium iodide also is in regular use for this purpose, and seems to give its best results when used in small doses over long periods with short intervals of rest now and again. It appears to exercise its most beneficial effects in cases with arteriosclerosis of syphilitic origin. The use of high-frequency currents has been strongly pushed in America, and it is claimed that they have sustained action in lowering pressure without undue cardiac depression. Snow, of New York, has written strongly in their favor, but Ronneaux and Lacquerriére state that such currents have no lasting effects in patients with a persistently high pressure. Some years ago Henderson made an extensive trial of this method without success, though often the patients felt temporary benefit.

Finally, it is important to remember that, even with high pressure, where formerly its use was regarded as contraindicated, digitalis has been tried safely and with benefit in cases in which there was danger of cardiac failure. He would strongly emphasize the importance of the early discovery of high blood-pressure, so that suitable steps may be taken to cope with it before secondary changes occur in the heart, blood-vessels, or kidneys. Prophylaxis is the best treatment, and in these days of advance in preventive medicine there is here a further opportunity. Henderson says America certainly has led the way—indeed, has perhaps overshot the mark, as there one of the fashionable diseases is "blood-pressure!" The American public being alive to the dangers of increased pressure to such an extent that many patients have regular observations made several times a year, just as they have their teeth looked to at regular intervals. With no desire to appear unduly as an alarmist, Henderson suggests that it would be a step in the right direction if more people on the shady side of 40 showed the desire to have an occasional overhaul from this point of view.

The Treatment of Antepartum Hemorrhage.

EDEN, in the *Lancet* of May 26, 1923, states that the first duty when faced with a case of antepartum hemorrhage, whether it be slight or severe, is to try to make out whether or not the placenta is attached to the lower uterine segment, since the management of the case after the first hemorrhage will proceed upon different lines according to the position of the placenta. The determination of this point may be very easy or very difficult. If there have been labor pains and the internal os is open, a partially detached portion of placenta may be felt on passing the finger into the uterus, and this will settle the matter. But if the patient has had no labor pains and is a primigravida, the cervix will be closed and the problem then has to be approached in a different way. No assistance can be obtained from the mode or time of onset of the bleeding, the period of pregnancy, or the character and extent of the first attack of hemorrhage. Examination of the urine may, however, give valuable help. The differential diagnosis cannot be disposed of in a word, and at the first examination the diagnosis must often remain in doubt, but in general terms it may be said that if the head presents and is readily recognized per vaginam, and if the urine contains albumin, the case is almost certainly one of accidental hemorrhage. If, however, the breech lies below and vaginal examination yields little information, and the urine is normal, the case is probably one of placenta prævia.

Common to both conditions is the need of what we may call for simplicity "hospital treatment;" except in patients of the luxury classes, immediate removal to hospital or nursing home is essential.

The immediate treatment of hemorrhage which is not accompanied by labor constitutes a fairly simple problem. In most cases the first hemorrhage is moderate in amount and the patient should be put to bed, given morphine (gr. ⅛ to ¼), and detailed obstetric examination should be deferred until the bleeding has ceased. A catheter specimen should be examined and an effort to establish the differential diagnosis should be made.

Let us suppose a seven months' pregnancy, with head presentation, some albuminuria, and slight edema of the feet. It is a case of accidental hemorrhage, the essential factor of which is probably a mild toxemia. With careful prophylaxis there is an excellent chance that the bleeding will not recur. The patient should be kept in bed and careful eliminative treatment carried out. The diet should contain little protein; diuresis should be produced by drinking large quantities of water, and the bowels should be caused to act loosely twice a day by saline purgatives. The urine should be examined daily, the patient being kept in bed for a week after the bleeding has ceased. Even if no further hemorrhage occurs special care is required for the remainder of pregnancy, the important points being to secure free action of all channels of elimination and to watch for albuminuria. The prognosis is good. If despite prophylactic treatment, or in cases in which this has not been carried out, recurrence of the hemorrhage occurs without labor, the same treatment should be applied, and the patient kept under close observation for a longer time. Her general condition will probably deteriorate with each attack of bleeding, for apart from the results of loss of blood, there is the toxemic factor to be considered.

The rare but very grave condition of concealed accidental hemorrhage probably would never be seen at all if prophylactic treatment were carried out in all cases after the first attack of bleeding.

The management of cases of placenta prævia can be sharply distinguished from the above. (1) No prophylactic treatment is practicable, for the bleeding results from a condition entirely out of our control; (2) recurrence of the hemorrhage is inevitable, and each recurrence tends to be more serious than the preceding one. It follows that we cannot afford to temporize as we may do in a case of accidental hemorrhage. As a rule it is inadvisable to wait for the recurrence of the hemorrhage.

Two courses are open in a case of placenta prævia when labor has not begun: one is to induce labor, and the other is to perform Cæsarean section. Cæsarean section is indicated if the patient is a primipara, if the child is alive and of at least 36 weeks' development, and the placenta can be felt all round the margin of the internal os (central placenta prævia). Any one of these conditions taken alone constitutes an arguable case for the Cæsarean operation, but the presence of all three should leave no doubt. On the other hand, induction should be practiced if the patient is a multipara, if the child is dead or non-viable, and if only one side of the os is occupied by the placenta. Again, any one of these conditions taken alone may be held to constitute an indication for induction in preference to Cæsarean section.

The principle underlying these indications is that induction is to be preferred (1) when the local conditions are such as to favor easy delivery (*e.g.*, parity), (2) when the amount of hemorrhage is not likely to be extreme (*e.g.*, in lateral placenta prævia), and (3) when the child is dead or its survival is already jeopardized by a high degree of prematurity. When the converse conditions are present Cæsarean section allows of rapid delivery, with less hemorrhage, and a fair chance of survival of the child.

Before induction external podalic version may be required, since a breech presentation allows readier control of hemorrhage during labor than a vertex. For a primigravida with closed cervix the intra-uterine bougie method, performed with strict antiseptic precautions and under anesthesia, its probably the best. If, however, the patient is a multipara, and the internal os admits the tip of the index finger, the decision is not so easy. If the membranes can be felt they should be ruptured with the finger or with forceps. If they cannot be reached and the placenta appears to cover the os completely, it is best to tear through the placenta, perforate the membrane, and pull down a foot into the vagina. This is practicable with one finger only, but is much easier if the cervix will admit two fingers. Traction can then be made in the manner to be described below.

Since in most cases the labor is premature, the child's chances of survival are small, and preservation of the mother's life becomes the first consideration. Cæsarean section may be done early in labor when the indications for it detailed above are all present. Generally speaking, however, accidental hemorrhage is best treated by rupture of the membranes followed by evacuation of a considerable quantity of liquor amnii; placenta prævia is best treated by pulling down the half breech into the cervix after preliminary podalic version if required. In cases of central, or approximately central, placenta prævia rupture of the membranes is not to be recommended, since bleeding is likely to be too severe to be controlled by the pressure of the advancing head. After tearing through placenta and membranes, and pulling a foot down into the vagina, gentle and continuous traction is applied, and labor always proceeds briskly; moreover, the half breech plugs the lower uterine segment and completely controls hemorrhage. A weight of 2 pounds may be attached to the foot, but the mother must then be left to deliver herself. Even if the cervix is sufficiently dilated to allow of instant delivery, the temptation to effect this should be resisted, for it is essential that the uterus should have regained its contractility when the moment comes for the delivery of the child. Full use of any interval should be made in the application of restorative measures; in serious cases infusion of blood is the best, but should no donor be available gum saline solution can be used. When the uterus is acting well and the presenting part has passed through the pelvic brim, 0.5 cc pituitrin may be given.

An alternative procedure to podalic version is the use of de Ribes's bag, but in his opinion this is only suitable for cases in hospital when expert aid is always instantly available, and then only under limited indications.

Plugging the vagina he regards as a

useful emergency measure: (*a*) As a preliminary to removal of the patient to hospital in an urgent case; (*b*) in either variety of antepartum hemorrhage, to check bleeding while other methods are in preparation. Further, in many cases of accidental hemorrhage, plugging the vagina combined with previous rupture of the membranes is the method of choice, and no other interference may be required. In cases of concealed accidental hemorrhage, vaginal plugging combined with active restorative measures will often give the patient her only chance of recovery.

The technique of vaginal plugging demands a word. Unless it is thoroughly done the bleeding will continue unchecked, and unless the strictest precautions are observed sepsis will follow. The packing must be so carried out that the upper part of the vaginal canal is tightly distended and the cervix completely surrounded by the packing material; a vaginal speculum, a long pair of forceps, and a good light are required, and in primiparæ an anesthetic. When the vaginal vault has been filled, the packing should be pushed upward with the finger and molded tightly round the cervix. Unless done in this way it is a waste of time to pack the vagina for hemorrhage. The vulva should first be shaved and disinfected with iodine or violet green, and the vaginal walls also disinfected. The best material for packing is sterilized "bismuth gauze"—*i.e.*, gauze impregnated with subgallate of bismuth; this can be obtained in 12-yard lengths 2 inches wide, and the end of the first length used is tied to the next so as to make a continuous pack. It is expensive, but can be relied upon to show no sign of putrefactive changes for twenty-four hours. A useful domestic substitute is made from long strips of sheeting or table-cloth, cut to appropriate width, and *boiled for an hour before use.* Packing should always be removed in twenty-four hours if delivery has not taken place, and some other method of controlling hemorrhage must then be adopted if necessary. A large proportion of cases in which vaginal packing is adopted in hospital practice show a febrile puerperium, and there is no doubt that the risks of infection which are associated with it are difficult to obviate.

Eden summarizes his contribution as follows:

1. Prophylactic treatment after the first attack of bleeding is strongly advised in accidental hemorrhage, but is inadmissible in placenta prævia.

2. Certain cases of placenta prævia are best treated by Cæsarean section after the first hemorrhage.

3. Cases of placenta prævia in labor are as a rule best treated by podalic version and pulling down a leg.

4. Dilatation of the cervix by de Ribes's bag is not recommended.

5. Most cases of accidental hemorrhage and certain mild cases of placenta prævia are best treated by rupture of the membranes.

6. Plugging the vagina after rupture of the membranes is useful in many cases of accidental hemorrhage.

Quinidine in Auricular Fibrillation.

In an editorial on this subject, the *Lancet* of May 26, 1923, states that experience is steadily accumulating as to the value of quinidine sulphate in the treatment of auricular fibrillation. Great claims often accompany the introduction of a new remedy which later proves not to meet them, but the specific action of quinidine on the auricle can be demonstrated by graphic records. The dangers of its use were magnified in earlier reports partly because it was then used in more than sufficient doses, and partly because it was tried in unsuitable cases. That it is a valuable adjunct in the treatment of heart disease is becoming steadily apparent, and the observations of Emanuel in this issue of the *Lancet* add to its position. It is not claimed by cardiologists that quinidine will approach the almost universal application of digitalis in cardiac therapeutics, and they desire to emphasize the fact that digitalis holds exactly as high a place in the treatment of heart failure as ever it did, its

employment having become more carefully selective. Indeed, quinidine has no direct value in heart failure, and most of the untoward results are attributable to its use when failure is present.

The function of quinidine is to restore the normal regular rhythm to a heart showing auricular fibrillation, and to that extent, and to that extent only, to improve cardiac efficiency. The attempt should be made when failure is in abeyance or when failure has been allayed by digitalis. In a word, digitalis combats heart failure, and quinidine abolishes auricular fibrillation which disposes to failure. Safety is attained if suitable cases are chosen and a moderate daily dose is reached by steps so that an idiosyncrasy toward the drug would be promptly recognized. So guided the danger is slight, but successful results will depend largely upon the care and skill with which the action of the drug upon rhythm is followed day by day during the course of treatment.

Mercurial Stomatitis.

FOREMAN, in the *Journal of the Royal Army Medical Corps* for May, 1923, first deals with the treatment of a patient who has had his mouth "cleaned" and who takes a moderate interest in oral hygiene.

In the majority of cases the patients complain after the second or third injection of tenderness of the palate, just behind the incisors. Very often at this stage very little can be seen to account for the tenderness. Sometimes the gums may be a little red or a slight puffiness observed.

The treatment refers to cases in which scaling has already been carried out.

Cover the point of a fine bristle with cotton-wool, saturate with chromic acid (100 per cent), and apply carefully round the necks of the teeth, on the lingual and buccal aspects.

On careful observation it will be noticed that in many cases a minute bead of pus has been expelled at the cervical margin due to the visible contraction of the gum tissue.

A mouth-wash of hydrogen peroxide and water, equal parts, immediately after the application of the chromic acid prevents any severe caustic effects. This mouth-wash should also be used after every meal.

After the first treatment the tenderness completely disappears. The continued success depends entirely upon the regular twice-weekly inspection and necessary treatment, and it is only in rare cases that a severe stomatitis develops.

Advanced cases of stomatitis arise when patients have been confined to bed and neglected to brush their teeth, or failed to keep their appointments. On examination the breath is extremely fetid, and there is marked ulceration of the gums, especially in the region of the incisors and third molar. It is quite common for the patient to state that he has been unable to eat food for two or three days, and that the pain kept him awake during the night. The tooth-brush has already been out of use for a week or two and necks of the teeth are crusted with a deposit of tartar, pus cells, and decayed foodstuffs. The pain is so acute that scaling is unbearable. At this time Foreman directs that a syringe be used with hydrogen peroxide and water (warm) between the teeth and so remove the loose matter. Then go carefully round with cotton-wool—using pellets and tweezers—and remove as much as possible of the tartar, etc. Clean well between the teeth and remove matter loosened by the syringing. Often a raw bleeding surface is left. After the patient has washed his mouth out well with peroxide and water swab the gum margins with chromic acid (100 per cent), using the pellets of wool and tweezers, and again use of hydrogen peroxide.

The concentrated solution of the chromic acid causes considerable discomfort for an hour or two after treatment, but in all cases the patients declared that the apparently drastic treatment was worth while, and that their sleep was not disturbed. The peroxide mouth-wash is used after every meal and is found very beneficial. He has found without exception that the patients on milk diet recover much quicker than those on ordi-

nary rations. Five to seven days' milk diet is usually sufficient; as it is difficult to insure "out patients" getting milk diet in barracks, it is recommended to admit severe cases to hospital until the condition clears up.

On the second examination two days later it is found that the teeth can be scaled without unusual pain. Chromic acid is again applied as before. In cases in which considerable absorption of the alveolar processes and recession of the gums has taken place, massage is extremely helpful in restoring the normal circulation and hardening the gums.

Unless absolutely essential, the removal of teeth whilst the patient is undergoing his course of injections should be avoided. Extraction at such times has been followed by extensive sloughing and later absorption, causing great difficulty in cases in which dentures are required.

It is advisable for patients wearing part dentures to leave them out altogether until the mouth has quite recovered; dentures, when worn, should be disinfected daily.

Tooth-brushes are a continual source of reinfection, and they should also be disinfected each time the patient attends for treatment.

Sensitive Fingers and the Tonsil.

HAYS, in the *Medical Times* for May, 1923, says that one has often heard the remark made that any tonsil which can be seen should be removed. In other words, all large tonsils are pathological. This may or may not be so, but it is a fact that a great many tonsils which, to ordinary inspection, seem to be harmless are just the ones which give rise to the most trouble systematically. For example, the tubercular tonsil is often exceedingly small, and the diagnosis of its diseased condition is made more from the condition of the cervical glands than from anything else. Moreover, by ordinary inspection very little of the tonsil may be seen and yet that tonsil may be much diseased.

In the examination of the tonsil, of first importance is inspection. The tongue should be firmly pressed down so as to view the lower poles. If very little can be seen, the patient may be forced to gag, whereupon the tonsils will be extruded from between the pillars. Of second importance is the palpation for a gland, beneath the angle of the jaw, frequently called the tonsillar gland. As a rule, if it is all palpable, one may conclude that whatever tonsillar tissue is present is responsible for it.

But aside from such examination, the author has found that the palpation of the tonsil is of the greatest value and will give much desired information. If one has a sensitive finger or trains the sensitiveness of his fingers to get the required information, he will find that it will help him a great deal in determining the type of tonsil he is dealing with.

Palpation of the tonsil, which includes the palpation of the pillars, has a twofold value: in the first place in may be used to massage the tonsil in order to expel infectious material, and secondly it may be used to determine the character of the tonsil itself. One frequently desires to find out whether the tonsil contains pus or serum, and at the same time may wish to make a culture of any fluid which is expressed. The tongue is held down firmly with a tongue depressor and, with the index-finger of the other hand, firm pressure is made against the anterior pillar and the tonsil, and the pillar is massaged from above downward. Many times caseous material may be expressed from the crypts in this way, and sometimes one can express a thin, glairy secretion from the crypts and from the superior tonsillar fossa which, on culture, will show pathogenic organisms.

But the palpation of the entire organ with the index-finger has not been used as frequently as it should be. He has found this plan of inestimable value because one can readily tell in this way the size, consistency and area of the tonsil and note how firmly or how loosely it is attached to the surrounding tissues. Sometimes a gland which cannot be seen, either because it is infolded

between the pillars or because it is so deeply buried, can be palpated in this way and found to be of considerable size. The procedure is simple. With the clean index-finger, the right finger for the right tonsil, the left for the left, one gently palpates the surface of the gland and behind and in front of it. Enough pressure may be made to note the consistency of the gland. He has frequently encountered tonsils which seemed to be of no significant size, which, on palpation, were found to be of considerable size, tonsils which were far more pathological than those which are so readily seen in the throat. In one instance the tonsils were no larger than a hazelnut, but it was decided to remove them because of a peculiar feeling to the finger, like fluctuation, which afterward was proved to be due to an abscess between the tonsil and the cellular tissues external to it.

The Story of Insulin.

In an editorial on this subject the *Lancet* of May 5, 1923, states that the story of insulin is in three chapters. In the year 1869 Paul Langerhans, a pupil of Virchow, described in his thesis for the Berlin M.D. certain cell groups irregularly scattered in the pancreas, which have since been known as his islands. On the ground of their structure he suggested the probability of a secretory activity. Becoming phthisical, he did not hold for long the chair of pathological anatomy at Freiburg, was unable to follow up his work, and died before the age of forty in Madeira. In 1895 Edouard Laguesse, professor of histology at Lille, first gave expression to the opinion that, whereas the digestive secretion of the pancreatic acini is delivered through the ducts, the islands of Langerhans are entrusted with some endocrine function important for carbohydrate metabolism; and he devoted all his working life to the elaboration of this opinion. Twenty-five years from anatomy to physiology, and it has taken another thirty years for therapeutics to exploit the physiological suggestion. The tertiary stage of the story was reached last month, when a hospital patient, admitted on the verge of diabetic coma with extreme air-hunger, a blood-sugar reading of 0.33 per cent, and an alveolar CO_2 reading of 1.1 per cent, was restored to comfort within three hours by the administration of 18 units of insulin extracted from bovine islands of Langerhans. For three weeks after this event the patient has continued to enjoy a diet of 33 g. of protein, 105 g. of fat, and 16 g. of carbohydrate, without glycosuria, on a daily intake of 12 units of insulin.

Although there are many points regarding the clinical uses of insulin as yet unexplained, as is made clear in the report to the Medical Research Council which is printed in this issue of the *Lancet*, the fact is undeniable that an internal secretion has been isolated from the pancreas for practical use which has, for better or for worse, a potent effect on the sugar content of the blood. If the quantity of the available preparation permitted—which it does not—insulin might be freely used by any diabetic subject, in the picturesque American phrase, for a carbohydrated jag. Even under the carefully controlled conditions of clinical research insulin has resulted in reducing the blood-sugar to a level incompatible with health and within an ace of fatal disaster. Its power for harm is good evidence of its specific efficiency. In one hospital ward a man of sixty-two who received 10 units of insulin at 1 P.M., followed by his usual dinner at 2:30 P.M., awoke from a snooze at 3:30 P.M. in a feeling of apprehension, with staring eyes, thick speech, rapid and feeble pulse, to become unconscious and incontinent at 5 P.M., with a blood-sugar level of 0.09 per cent. Fortunately an intravenous injection of glucose in normal saline solution, followed by glucose and lime-juice by the mouth, restored his working level of glucose in the blood.

Evidently insulin should never be given during periods of abstinence from food, as even the accidental omission of a meal expected to follow a dose may lead to harm. Nor is it glucose alone on which the remedy

is able to act, for it appears that the accumulation of ketones and other disorderly metabolic products in the blood has been similarly reduced. One of the most important and puzzling facts so far disclosed is the difference in reaction to insulin of the true diabetic coma and the postoperative coma which may arise in diabetics. Clinical investigation shows some primary difference between these and has opened up a field for further investigation. The importance has been demonstrated of getting a diabetic into the best possible condition before attempting operation.

No doubt the first thought in the minds of many will be whether even yet anything has been obtained in the way of a cure for diabetes as distinct from a welcome alleviation of one or more of its most troublesome symptoms. The report of the Medical Research Council is quite definite on this point. As yet there is no satisfactory evidence—time has hardly allowed of that—to show that diabetes in its most serious forms can be completely cured by insulin. Under insulin treatment tolerance may and does alter in the direction of improvement; it does not necessarily do so; it has even changed for the worse. In a man, for three years on starvation diet, who dropped from 14 to 6 st. in weight, a small dosage of insulin made him at first sugar-free; when the diet was made more generous the dose of insulin had to be quadrupled in order to keep the urine free from sugar.

The Treatment of Severe Diabetes with Insulin.

FOSTER, in the *New York Medical Journal and Medical Record* of May 16, 1923, states that the specific action of insulin is notable in its effect on the sugar of the blood. After a dose of insulin the blood sugar falls. The amount of decrease is to some degree dependent upon the size of dose of insulin given, but also upon the severity of the diabetes. Individuals react differently in their quantitative response, although the general effect is alike in all.

It becomes necessary then to determine with some precision the appropriate dose for each individual diabetic. An overdose may reduce the blood sugar too much and cause symptoms which are spoken of as insulin shock. This condition arises if the blood sugar falls below about .05 per cent. Coma may develop and death occur. These critical symptoms can be combated successfully by administering promptly small doses of glucose intravenously. Recognizing this possible source of danger and understanding that a dose of ten units of insulin may have much more effect in one individual than in another, it is evident that the initial period of treatment must be conducted with some degree of exactness.

When a diabetic patient is to receive insulin the diet should be controlled in order that the amount of sugar entering the blood be uniform from day to day. With a patient on such a diet the first effect notable after insulin treatment is started is the subsidence of the glycosuria. This may be slow, requiring several days if the dose of insulin be small, or it may be rapid. He has seen the sugar disappear from the urine in a case of diabetic coma within twelve hours. The dose then was, of course, large. After the urine is free of sugar the only guide for dosage is the blood sugar. From the patient's point of view the effect of insulin is surprisingly prompt. Not infrequently within a few days there is a sense of renewed strength and energy which cannot be entirely accredited to psychological effect. This effect is quite easily understood since the sugar, which before treatment was lost to the body and excreted in the urine, under the influence of insulin is utilized for energy. In severe diabetes the urinary glucose may represent twenty-five per cent of the energy of the food taken.

There remains to determine the amount of insulin required to control the glycosuria which will probably develop in severe diabetes when the patient is placed on a diet like that which he outlines. It is impossible to tell in the beginning how much insulin will be required. On this account one usually begins with rather smaller doses

than it is expected will be needed. If the urine is carefully watched during the first two days, *not as twenty-four-hour specimens but each separate voiding,* a guide may be had to the effectiveness of the insulin dosage. One may be sure that the amount given is not excessive so long as sugar remains in the urine. The moment, however, that sugar disappears from the urine there is no guide except the blood sugar. In beginning insulin treatment, one might decide on a dosage of five units three times a day, to be given about half an hour before meals. If it were found on observation during subsequent days that considerable amounts of sugar were being excreted in the urine, then the dose of insulin should be gradually raised. On the other hand, if, after twenty-four or forty-eight hours, sugar should disappear from the urine, then the dose of insulin must be promptly diminished, or possibly it may have to be stopped entirely for a period of six to twelve hours, at the end of which treatment is reinstated on a smaller dosage as sugar again reappears in the urine. Considerable experimentation is required with each case in order to determine just what amount is necessary to care for the diet and not allow more than traces of sugar in the urine and at the same time not be excessive enough to run the risk of producing a fall in blood sugar to a dangerously low level. There is no rule that can be given in determining this dosage, since with some cases five units seem to have as much effect in the combustion of carbohydrate as twenty-five units have in another case.

It is notable in what has already been said that the iletin treatment has caused a wide departure from the standards of scientific treatment which prevailed a year or so ago. Under the old treatment we regarded it as a mistake to have any sugar in the urine. Some authorities went so far as to endeavor to secure normal blood sugar as well as a sugar-free urine. It became evident when we began to use insulin that we must abandon the attempt to maintain a normal blood sugar because the latitude between the normal, fasting blood sugar of 100 to 120 milligrammes, and the dangerously low blood sugar of 50 milligrammes, was so narrow that slight errors in dose or slight changes in the patient's condition might at any time precipitate insulin shock. In fact, that is what did occasionally occur and caused the change in the procedure. As a result of this experience many of us now feel that with patients on iletin treatment and not under constant observation, the safest condition is to have constantly a trace of sugar in the urine, the ideal being about 0.1 per cent. The reason for this "buffer sugar" is that when this is present we are confident that the blood sugar is something above 160 milligrammes (the renal threshold). Certainly, in many cases, it may be considerably above this. Whether this is a desirable state of affairs in itself is questionable. But we are presented with the dilemma of running the constant danger of having a patient manifest shock or the alternative of countenancing a persistent glycosuria.

Insulin can be given three times a day before meals. The reason for selecting this time is in order that the absorption of the insulin into the blood stream will coincide approximately with the increase of blood sugar produced by the intake of food. In some patients we find that two doses of insulin a day, one before breakfast and one before supper, meet the desired end, and in a few patients we have succeeded in reducing the dose to one single administration, either in the morning or in the evening. It is obviously desirable to make the number of injections as few as possible, not only on account of the convenience to the patient, but also because there are relatively few skin surfaces of the body suitable for hypodermic injections, and when these are being given two or three times a day the problem of a suitable site may become serious.

It may well be asked what necessity is there of any restriction in diet if insulin is used in large amounts. The answer to that, it seems to him, is found in the fact that insulin cannot be used in large amounts unless the patient is constantly under

observation or has been under observation a sufficient length of time to determine, with some exactness, the relation of the high dosage to a definite diet. Now, if this diet is transgressed, symptoms develop analogous to those in diabetics who have had no treatment, namely, thirst, polyuria, etc.

Then, too, when the insulin dosage is high the carbohydrate dosage, too, must be constant, or there will be in all probability accidents. All observers have noted that a fairly constant and definite ratio between total carbohydrate in the diet and the number of units of insulin used seems to exist for each patient.

This ratio is individual and varies in different cases, but for successful treatment it must first be determined, then adhered to, and occasionally corrected.

The Administration of Hypertonic Salt Solutions for the Relief of Intracranial Pressure.

FAY, in the *Journal of the American Medical Association* of May 19, 1923, states that hypertonic salt solutions are of great value as dehydrating agents for the rapid reduction of intracranial tension.

Magnesium sulphate solution, 1½ ounces of crystals in water by mouth or three ounces of crystals in six ounces of water by rectum, has given marked relief from symptoms of intracranial pressure and "medullary edema."

It is of assistance in eliciting symptoms, otherwise masked by intracranial pressure.

The routine administration of magnesium sulphate solution two hours before operation in cases with increased tension has been of decided value.

It is of assistance further in checking the rapid advance of papilledema, and in relieving the coma and respiratory depression seen in cases of marked intracranial pressure.

In traumatic head injuries in which the pulse and respirations fall below the normal, its use is very effective, so that surgical intervention in this group of cases has been found unnecessary.

Rapid dehydration of other fluid collections in the body, as in edema of the lungs, may also be accomplished by this agent.

The intravenous injection of from 50 to 120 cc of 15-per-cent sodium chloride solution, covering a period of twenty minutes, has been found a useful adjunct in exploratory craniotomies, especially when the dura is tightly distended and ventricular puncture is unsatisfactory or cannot be effected.

Tolysin in Acute Rheumatic Fever and Other Conditions.

BARBOUR, LOZINSKY and CLEMENTS, in the *American Journal of the Medical Sciences* for May, 1923, state that tolysin (ethyl ester of paramethyl-phenylcinchoninic acid) appears to be a very safe drug.

Two different patients received each 50 gm. of tolysin within eight days without any untoward symptoms whatever. Their recent laboratory investigation has shown that the body is unable to absorb much more than the therapeutic dose.

In a series of 12 cases of acute rheumatic fever tolysin was found a fully efficient therapeutic agent. The usual dose required for complete relief of symptoms is 10 to 16 gm. Partial relief was obtained with 7 to 8 gm. A satisfactory routine is to give 2 gm. every two hours for three doses, followed by 2 gm. every four hours. No gastric symptoms were elicited, and albuminuria was increased in only one case.

Satisfactory results were further obtained in 6 out of 7 cases of arthritis of other types, including acute infections and chronic joint pains.

They claim that tolysin has been employed in cases of ordinary "colds" and headaches with effects apparently equivalent to those of acetyl salicylic acid, but the action appears slower and somewhat larger doses are indicated.

In acute tonsillitis 1 to 2 gm. tolysin (which can be repeated) exerted a good antipyretic action.

These writers further assert that the employment of tolysin may be substituted

for any internal salicylate medication. It is particularly efficient in acute rheumatic fever and, on the basis of the evidence at present available, apparently can be administered constantly in this and other forms of arthritis without harmful effects.

The Treatment of Liver Abscess by Aspiration.

MANSON-BAHR, LOW, and PRATT, in the *Lancet* of May 12, 1923, in referring to the operative technique, state that an ordinary Potain's aspirator is sufficient. The needle should not be inserted to a depth exceeding 3¾ inches.

A reserve set of tubing and junctures in case of plugging with thick pus or blood-clot during operation is necessary.

When pus is struck by exploratory puncture, complete evacuation of the abscess cavity should at once be carried out as part of the same operative procedure.

Should the pus prove too thick for aspiration, Manson's trocar and cannula can be inserted along the track of the aspiration needle, and a free evacuation of the abscess cavity thereby obtained.

No definite instructions can be laid down about the site of puncture; the site of election should be the point of greatest tenderness and swelling, should such exist. In the absence of any localizing signs the routine procedure adopted by them has been (1) eighth interspace in anterior or mid-axillary line, (2) the epigastric route.

Without a general anesthetic not more than three punctures at one time are advocated, but under general anesthesia success has attended the search for pus after as many as six punctures.

Contrary to the usually accepted teaching, there appears to be no particular advantage in partial aspiration; in other words, as much pus as possible should be evacuated at one aspiration.

No special advantage seems to accrue from the injection of emetine or other amebicidal substances into the abscess cavity. Healing appears to take place without them.

The effusion of serum into the abscess cavity probably normally takes place and should be regarded as the natural method of repair. This must be considered as being quite a distinct process from a reaccumulation of pus.

The risk of hemorrhage after multiple punctures, although theoretically great, in practice appears to be of small import. Whenever possible, puncture of lung tissue should be avoided as increasing the risk of hemorrhage.

As to the choice of an anesthetic, in the great majority of cases general anesthesia is to be preferred to local. When, however, definite localizing signs are present and the position of the abscess is certain, or almost certain, or when the physical condition of the patient is such as to contraindicate the use of a general anesthetic, then local anesthesia can be resorted to, a 2-per-cent solution of novocaine with adrenalin being employed. The skin and muscles (including the diaphragm, if necessary) must be infiltrated in the line of the puncture, but once the exploring needle has passed into the liver all risk of pain is over. The passage of a stout needle through the liver substance is absolutely painless; this was demonstrated in one of the cases when the abdomen was opened under local anesthesia. They have come to regard, as the result of their experience, a complaint of intense pain experienced by the patient during exploration under a local anesthetic as not being suggestive of liver abscess, but as rather indicating the passage of the needle through some solid tumor, and in the latter contingency (malignant disease) they have noted that the small amount of blood withdrawn is also suggestive.

When, as the result of unsuccessful puncture, the possibility is suggested of the case proving to be one of malignant disease simulating abscess, then an exploratory laparotomy under general anesthesia should be undertaken. Local anesthesia possesses the advantage that, should the pus prove viscid and difficult of aspiration, continuous suction may be maintained for hours, if necessary, without causing any further dis-

comfort or risk, such as would occur if prolonged general anesthesia had to be kept up.

They draw the following conclusions:

Liver abscess may often be present, when scarcely suspected, and may exist in absence of all suggestive laboratory tests (leucocytosis, pyrexia, ascertainable presence of E. histolytica). Therefore in cases of doubt aspiration should be undertaken. A definite leucocytosis may not be present, but even if present it is not usually a high one. Pain in the right shoulder may be the most prominent and outstanding symptom. Liver abscess may exist in the absence of any pain or tenderness referable to the liver area. Entamebæ may, or may not, be demonstrable in the aspirated pus; their absence, or rather the inability to demonstrate these organisms under the microscope, does not negative the diagnosis of amebic abscess; neither can these organisms be demonstrated in the feces in every case. *X*-rays may be of considerable assistance in diagnosis; immobilization or stretching of the dome of the diaphragm should be regarded as a valuable positive sign.

A general anesthetic is not always required; aspiration can sometimes be successfully performed under local anesthesia, with little or no immediate risk. All available pus should be aspirated at the one operation. Aspiration is followed by a great sense of relief; there is a complete absence of shock following the operation. Reaccumulation of pus does not usually take place, but if it does aspiration may be repeated and be followed by a permanent cure. The method is applicable to the conditions of general practice. The injection of emetine into the abscess cavity is by no means essential, nor, in their opinion, advisable, but it is most necessary to treat the patient with large doses of emetine bismuth iodide by the mouth in order to clear out, if possible, the source of infection from the bowel, and so to prevent reinvasion of the liver by entamebæ derived from the bowel wall.

Insulin and Diabetes.

CAMMIDGE, in the Correspondence columns of the *British Medical Journal* of May 5, 1923, states that in a letter which appeared in the *British Medical Journal* of November 18, 1922 (p. 997), he ventured to predict that the optimistic forecasts then being circulated in the press as to the curative properties of insulin in diabetes would not be fulfilled, and that its true sphere of usefulness was likely to be limited. He has since had the opportunity of putting the treatment to a practical test in a number of cases of various types with insulin prepared in his own laboratory, and the results obtained have tended to confirm the conclusions he arrived at on theoretical grounds. From the articles which appeared in the issue of April 28 it would seem that the experience of other English workers has been similar to his, for, although it is evident that insulin is capable of reducing the sugar content of the blood in all forms of hyperglycemia, it is not a "cure" for diabetes in the popular sense of the term—that the patient is able to resume an unrestricted diet after a course of treatment. In the large majority of cases the beneficial effects of insulin are only temporary, ceasing when the injections are discontinued; in a small proportion a permanent improvement in metabolism appears to result, but in his experience these are cases in which the hyperglycemia and glycosuria are dependent entirely, or almost entirely, upon a functional deficiency of the internal secretion of the pancreas.

As a means for tiding diabetics over crises which are frequently uncontrollable by other methods of treatment, or for insuring a maintenance diet in severe cases in which the power to metabolize carbohydrate is permanently lost, insulin is invaluable, but for the average patient treatment with insulin under present conditions is a will-o'-the-wisp, reliance upon which usually ends in disappointment.

He is interested to see that the observations carried out by Kellaway and Hughes

have led them to the conclusion that insulin improves metabolism by a transformation of carbohydrate into some other complex, with economy of oxygen and liberation of excess of carbon dioxide, for his own experiments, conducted along entirely different lines, have suggested that when insulin is injected the diminished sugar content of the blood which results is associated with an increase in the hydrolyzable carbohydrate and deposition of glycogen in the tissues.

It is suggested by Leyton in his paper that a differential diagnosis between pancreatic and hepatic disease may be made by estimating the sugar in the blood after an injection of insulin, a fall in the sugar indicating a pancreatic origin for the hyperglycemia, while no distinct change will point to the liver being at fault. Seeing that insulin reduces the sugar content of the blood even in normal animals in proportion to the dose, it would be interesting to have a full account of a case in which "no distinct change" was produced in the blood sugar by a full injection, and the reasons for concluding that the hyperglycemia was of hepatic origin.

It is unfortunate, in his opinion, that the Medical Research Council have seen fit to adopt a unit of measurement for insulin differing from that originally described by its inventors, as it will lead to endless confusion and call for very careful distinction between doses given on the English and Toronto bases.

Surgical and Genito-Urinary Therapeutics

Syphilis in Orthopedic Surgery.

O'REILLY *(Journal of the Missouri State Medical Association,* May, 1923) comments on the importance of recognizing the presence of syphilis in orthopedic cases. He quotes Roberts to the effect that in 226 cases of congenital syphilis diagnostic errors had been made. Eighty-one of these cases had been recorded as joint tuberculosis.

Practically all writers on the subject believe that syphilis is much more common than is usually supposed. It is estimated that between ten and twenty-five per cent of orthopedic cases are syphilitic, and some have even placed the percentage higher. The importance of a correct diagnosis in a class of cases as common as this is obvious. Unfortunately, in joint syphilis, the clinical picture is most uncertain and there is no definite symptom-complex. In making a diagnosis special attention must be paid to the following points: History, physical signs and symptoms, *x*-ray, Wassermann, and the therapeutic test.

In all cases a very careful history should be made and special attention should be given to the family and past history. In adults one must consider the possibility of either acquired syphilis or a late manifestation of hereditary syphilis. All points that might suggest the possibility of a syphilitic infection, either in the patient or in the parents, should be elicited both by direct and indirect questioning. One should not fail to inquire about the previous health of the parents; the number of miscarriages, if any, should be noted, and the possible cause; the number of still-births is also significant; the number of children dead, if any, and the cause of death; the general health of the living children.

In congenital syphilis a diagnosis is more readily made on the physical signs than in acquired syphilis. Here, in addition to the actual bone and joint involvement, there are usually other signs of congenital syphilis, which must be carefully sought after. Among these may be mentioned cicatrices about the mouth and anus, snuffles, adenoids, which may at times suggest syphilis, high arched palate, Hutchin-

son's teeth, nervous symptoms, and other affections.

Painless bilateral effusion of the knee-joint is suggestive of hereditary syphilis.

Periostitis is almost always present and usually involves a number of bones. Osteitis is frequently present. It shows a thickening of the cortex and a blurring of the normal bone shadows. It may cause a bowing of the bone on one side. Gummata show up as a destructive process surrounded by a wall of sclerosis. Osteochondritis begins at the diaphyso-epiphyseal line, usually on the diaphyseal line, and may extend to the joint, causing joint destruction. In pure joint syphilis the *x*-ray may not show any typical signs, but an examination of other bones may clarify the picture by showing typical periostitis.

A positive Wassermann test points strongly to syphilis, though there may be a mixed infection, usually tuberculosis, or there may be a joint lesion in addition to syphilis. A negative Wassermann does not exclude syphilis, especially in the congenital type.

When in doubt, the therapeutic test should be employed, and this followed by repeated Wassermann tests.

Joint syphilis may simulate almost any orthopedic condition.

How Adrenalin Should Be Given.

TRIAS and DORLENCOURT *(The Practitioner,* April, 1923) have called attention to some interesting points in connection with the administration of adrenalin.

It is quite legitimate to give the drug by the mouth, because it is absorbable. The ingestion of adrenalin sets up hyperglycemia, in proportion to the amount taken.

The drug ought to be given in very concentrated solution, because the higher the concentration the more quickly absorption takes place. The use of a maximum of 10 cc as the solvent is recommended.

Ingestion should be made when fasting, because this allows rapid absorption and the use of a concentrated solution. Henri Vignes fully agrees with this on the strength of the results he has obtained in various gynecological and obstetric cases treated by opotherapy.

The dose should be large, from five to ten times that given by injection. Vignes believes that 20 drops (1 mg.), a big one for an injection, is quite insufficient by the mouth. The doses usuallly active and tolerated are from 60 to 100 drops. In a case of attempted suicide 40 mg. were taken, but the subject only suffered from a temporary upset.

The question of dose has some importance, for among the cases recorded of vomiting of pregnancy treated by adrenalin, the best results were obtained from the use of large doses, whatever opinion may be held with regard to the pathology of this vomiting. Moreover, in comparing, in the treatment of this affection, adrenalin and suprarenal extract, it is not taken sufficiently into account that one of these products is given in large doses and is effective, whilst the other is given in small doses and has no effect. The administration of adrenalin and of suprarenal products must be watched very closely by the physician, as Bandler has pointed out. The appearance of pallor is a symptom of intolerance, and the drug must be given up or given in smaller doses.

Adrenalin should be given in isotonic solution, in Ringer's solution, or failing that, in physiological serum. Isotonic solutions pass more quickly from the stomach into the intestine than non-isotonic.

Vignes calls attention to some dangers of hypodermic injection. He has seen many cases of scars following the injection of adrenalin for postpartum hemorrhage. A small scar is a disagreeable matter after injection of the 1-in-1000 solution, but a scar which spreads over the whole of the outer surface of the thigh is a disaster. Dilution in half a liter of physiological serum, far from lessening the risk, only serves to increase the extent of the necrosed area.—*Journ. des Praticiens,* Feb. 10, 1923.

Mortality of Surgery in Exophthalmic Goitre.

PEMBERTON *(Surgery, Gynecology and Obstetrics,* April, 1923) reports that in the Mayo clinic during 1922, 1093 operations were perfomed for exophthalmic goitre, with 11 deaths, a mortality of 1 per cent. These figures were computed from the surgical procedures on patients with exophthalmic goitre only, the diagnosis of which was based on the clinical history and findings and on the basal metabolic rate, and corroborated in every instance in which gland tissue was removed by the pathologist's diagnosis of diffuse parenchymatous hypertrophy of the thyroid gland. Unless the clinical diagnosis is accurately checked by the estimation of the basal metabolic rate and by the characteristic pathological findings in the gland a large loophole for error exists. A definite distinction must be made between exophthalmic goitre and other types of goitre if the facts are to be reached. If statistics are based on the various surgical procedures for goitre, only a vague idea can be obtained of the operative risk of patients with exophthalmic goitre, for the mortality rate will be diluted in direct ratio with the number of simple goitres included in the computation. Thus during the same period there were 663 thyroidectomies on 663 patients for adenomatous goitre without hyperthyroidism, with one death; a mortality rate of 0.15 per cent.

In the earlier days of thyroid surgery the relatively high mortality rate was an influential factor in the decision of many patients with exophthalmic goitre to seek means of cure other than surgery. Many of these finally came to surgery late in the course of the disease, when the operative risk was increased and when the prospect for complete cure was greatly diminished; thus a small vicious circle was created. But the knowledge of the benefits derived from surgery has gradually become more widely disseminated, and to-day a much larger proportion of patients with exophthalmic goitre seek surgery primarily early in the course of the disease, when the risk is less and the prospect for complete cure is greatest.

The causes of death following operation on patients with exophthalmic goitre may be conveniently divided into three groups: (1) death as a direct result of the disease or the effects of the disease; (2) death as a direct result of an accident; and (3) death as the joint result of the disease and an accident.

The rôle played by the disease itself as the direct cause of death following operation may be considered under two headings—acute exacerbation of hyperthyroidism or dysthyroidism induced by a normal operative procedure, and visceral degenerative changes incident to the long-continued hyperthyroidism.

Acute exacerbation of hyperthyroidism may be induced by the effects of the surgical procedure, by an intercurrent disease, trauma or shock, or it may be spontaneous at any time during the course of the disease.

The preventive measures divide themselves into the preoperative preparation of the patients and the details of the surgical management. By means of preliminary treatment through the coöperative efforts of the internist, the laboratory, and the surgeon, the condition of the patient in most instances can be so greatly improved that the danger of postoperative thyroid crises is reduced to a minimum.

Between 30 and 40 per cent of the patients with exophthalmic goitre are in good condition on admission to the clinic, and require only routine preliminary examination and treatment to prepare them for thyroidectomy. The condition of one-half of the remaining 60 to 70 per cent, who are not considered safe for operation on admission, can be so markedly improved in ten to fourteen days under medical management, consisting of rest, adequate diet and fluids, digitalis as required, and the judicious administration of iodides (Lugol's solution), that the patients become safe risks for primary thyroidectomy. For the remaining 30 to 40 per cent preliminary surgical measures, such as ligations and

injections, are necessary: (1) when there is doubt as to the possibility of an acute reaction in a moderately toxic patient following a major operation, a ligation is performed or an injection of boiling water is given as a tolerance test; and (2) when it is apparent that a primary thyroidectomy is almost certain to induce an acute reaction in a more toxic patient, the minor operative procedures are employed as therapeutic measures. Later, after a period of rest, in most instances the benefits derived therefrom are so marked that the operation for the resection of the goitre can be undertaken with almost complete assurance of the absence of any postoperative reaction.

The residual effects on the organism of long-continued hyperthyroidism manifest themselves in visceral degenerative changes, especially affecting the heart, liver, kidney, and muscles. These changes are often insidious in onset, but slowly progressive and, unfortunately, only partially remediable.

The accidents responsible for death following operation on the thyroid gland are similar to the accidents following other operations. They may be divided into those avoidable and unavoidable.

In the early surgery of goitre, hemorrhage on the operating table was common, and often fatal. To-day, while profuse hemorrhage is sometimes encountered during the course of thyroidectomy for a very vascular and friable goitre, our means of controlling bleeding are so vastly improved that this is practically never a direct cause of death.

Obstructive dyspnea is a complication in goitre surgery which must be constantly borne in mind by the operator. It is always of serious importance, not infrequently is a contributing factor, and at times is the decisive factor, in the death of the patient. Instances of collapse of the trachea with serious dyspnea have been encountered during and after the removal of large goitres, but they are very uncommon. Similarly, it is rare to find postoperative edema of the glottis of sufficient degree to produce serious dyspnea. The most common cause of this very serious complication is paralysis of one or both of the vocal cords, as a result of either permanent or temporary injury of the recurrent laryngeal nerve.

Theoretically, parathyroid tetany must always be included in the list of dangers associated with operations on the thyroid gland; but practically, with the standardized operations of to-day, its incidence is so small and the severity of the attack is so mild that its rôle can be considered only with those complications of less importance.

Pulmonary infection as a complication in patients with exophthalmic goitre is relatively common and is often an important, if not a decisive, factor in the death of the patient. The complication cannot be strictly considered as avoidable, but its incidence can be materially reduced by care in the surgical procedures. The avoidance of prolonged general anesthesia, of prolonged surgical trauma, and of injury to the recurrent laryngeal nerve, is in this connection a principle of paramount importance.

While the number of deaths proved to be due to air embolism is very small, the author is convinced that it is a danger in operations for goitre which every surgeon should fully appreciate.

This complication would account for many of the "unexplained" goitre deaths that have occurred on the operating table, or a few hours later. To avoid this the thyroid veins should be tied as they are divided, and at the conclusion of the operation, before the wound is closed, the patient should be made to strain, as by coughing, in order to detect the presence of an insecurely tied vein.

The occlusion of a large branch of the pulmonary artery by a blood clot is an unavoidable tragedy which occurs in association with all major surgical operations, but, fortunately, in operations for goitre its occurrence is uncommon.

Wound infection occurs with about the same frequency as in other surgical cases of similar nature, and, fortunately, only in the exceptional case does it endanger the life of the patient.

Often death following operation may be caused by the disease and some exciting or contributing factor other than the effects of a normal operative procedure. For intance, a patient with moderate toxemia, who in all probability would survive an uncomplicated operation, may die if the operation or the convalescence is complicated by an accident, such as obstructive dyspnea, hemorrhage, or pneumonia, which in itself is not of sufficient magnitude to prove fatal.

In cases of exophthalmic goitre the margin of safety is so small that any added tax on the organism may completely alter the operative result. Extreme care of details in the surgical management of patients with exophthalmic goitre is paramount.

A Review of the Roentgenological Consideration of the Appendix.

QUINBY *(International Journal of Surgery,* February, 1923) concludes an excellent study on this subject as follows:

1. *X*-ray examination of the appendix is now generally recognized as being a fixed principle in internal diagnosis, which gives the maximum of positive findings in the disease processes of this organ and the accompanying complications and sequelæ.

2. *X*-ray examination for the determination of pathology and of deviations from the normal should only be conducted by physicians fully qualified as such, for a thorough knowledge of medicine is essential to giving the highest percentage of positive findings, and in order to render full value to the patient and safeguard the physician and surgeon.

3. *X*-ray examination of the abdominal viscera can never be reduced to an algebraic formula, for the obvious reason that the human equation is modified by the physician's experience and judgment and inherent frailties, while the patient contributes innumerable unknown quantities, ranging from psychic state to congenital abnormalities.

4. *X*-ray examination of the appendix contributes its greatest value in determining the position of this organ and its relation to other structures.

5. *X*-ray examination is the only preoperative method of analyzing the freedom of mobility of the conglomeration of organs and parts in the lower right abdomen, and furthermore gives the relative degree of involvement in adhesions of one structure to another.

6. The size of the appendix can be determined with a great degree of accuracy, dependent upon the length of its canal. The shape and size of the lumen of the appendix can be demonstrated and the relative amount of infiltration of its walls, while careful study will aid in determining the existence of obliteration of all or part of its canal.

7. *X*-ray examination is of great aid in analyzing the functional activity of the appendix with regard to drainage and its capacity to fill with and discharge fecal contents, while in younger subjects information may be obtained concerning the peristaltic activities of this organ.

8. *X*-ray examination of the appendix is the most accurate method of localizing pain and tenderness to this part when it is the principal contributor to abdominal symptoms, and is the greatest aid in differentiating renal colic, acute gall-bladder involvement and pneumonia from appendicitis.

9. Foreign bodies, etc., may be localized in the appendix when a history of swallowing such objects as can enter the appendix leads to suspicion of contributing to abdominal symptoms.

10. An analysis of the evidence of opinions from various writers, together with the author's observations, refutes the earlier conception that the entrance of barium or bismuth into the appendix is indicative of pathology. In fact, the opposite view could be supported, as the non-filling of the appendix is frequently due to the retention of old material. But even this should not be taken as a criterion, for once barium has entered such an appendix, the probability of its retention after the cecum is empty

is the same as before the examination, and is the most conclusive evidence of poor drainage and therefore an excellent sign of pathology.

Surgical Treatment of Carcinoma of the Lower Lip.

LEIGHTON *(Journal of the Missouri State Medical Association,* March, 1923) contributes a study of 412 cases of carcinoma of the lower lip from the surgical clinic of the Bardnard Free Skin and Cancer Hospital. Of these, 42 occurred in the upper lip and 370 developed on the lower lip. There were but 16 women affected; 9 of these gave a history of using a clay pipe, two chewed tobacco, one used snuff. Only 102 of the men are recorded as smokers or users of tobacco. The largest number reporting were in their fifties. It is noted that many patients presented themselves in a deplorable condition, quite beyond operative reach. The responsibility for this is dependent (1) on the quack cancer specialists who apply irritating remedies which only spread the disease; (2) on the patient who neglects to consult with his physician, or fails to take his advice of surgical intervention; (3) on the physician who first sees the case but fails to recognize the disease, or recognizing it procrastinates in seeking the advice of a surgeon, or attempts superficial surgery.

Carcinoma of the lip is one of the easiest conditions to diagnose. It is of slow development. It most frequently occurs as a papillary tumor on the vermilion border of the lip or as an indurated, irregular ulcer. The cervical lymph nodes may not be palpable for months or years. Chronicity of the local lesion is one of the distinguishing characteristics. It does not tend to heal under bland ointments, and caustics usually add fuel to the flame.

Chancre of the lip is of rapid onset. The cervical lymph nodes are early affected and the local lesion has all the characteristics of the primary sore. The development of the secondary symptoms and the Wassermann should expel all doubt. Simple irritations, like fever blisters, should respond rapidly to treatment. Cracks, blisters or ulcers which do not respond readily to treatment should excite our suspicions. We are taught always to be on the lookout for syphilis. Why not suspect cancer? The deaths from this disease are appalling.

The prognosis of cancer of the lower lip depends in some measure upon the age of the patient, the duration of the disease, and the type of operation performed. As a rule the younger the patient the less promising the outcome in cancer. The longer the duration of the disease the more unpromising the result, since glandular metastasis has been given a chance to develop, and when once developed only a small per cent are cured, even after most radical operations.

Warren has well stated that the treatment of cancer of the lip is a major operation and not the minor procedure which many would make it. Too frequently we find these patients operated by a simple "V"-shaped operation without neck dissection. By this practice the weight of authority is discarded. One has only to contrast the statistics of the Middlesex Hospital and the Mayo Clinic to realize how inadequate are simple "V"-shaped operations alone. Rountree of the Middlesex Hospital reported 126 cases of lip cancer treated with a "V"-shaped excision. In these there were 70 recurrences. Sixty per cent of the lip cases from the Mayo Clinic are reported alive at the present time.

The lymphatics from the lower lip are distributed as follows: afferents pass from the outer portion of the lower lip to the chain of lymph nodes three to eight in number, situated along the lower border of the horizontal ramus of the mandible. One node, which rests upon the facial artery just before it passes over the rim of the mandible, is larger than the rest, and this, together with two others which are smaller and lie one on either side of the large nodes, are the usual representatives of this group. Occasionally a small

node remains embedded in the substance of the submaxillary salivary gland. (The late J. B. Murphy referred to a gland which he said was always present over the mental foramen. I have not seen this described elsewhere.) The efferents from the submaxillary nodes open into the superior deep cervical nodes situated near the common carotid artery. The lymphatics from the central portion of the lower lip and integument of the chin pass directly to the submental nodes, two to four in number, situated in the triangular space included between the bellies of the digastric muscles. Each of the two principal nodes rests upon the inner border of one of the muscles. Sometimes these nodes are arranged in a vertical manner with one just beneath the chin and the other just above the hyoid bone. The efferents from the submental nodes empty into the submaxillary group and also into the superior deep cervical nodes, into which the submaxillary group also drains, situated on the internal jugular vein where the omohyoid musc'e crosses it.

Of 370 case records many show that the patient declined operation; others were inoperable, and for them little could be done; some were treated with *x*-ray or radium; and in some palliative operations were performed.

There were 152 radical operations performed. The operation most frequently used was a modification of the Cheatle or Stewart, and is performed in the following manner: The submaxillary and submental triangles are exposed through an incision parallel with the ramus of the lower jaw midway between the symphysis and the hyoid bone. The incision extends to the sternocleidomastoid muscle on each side and divides the skin and platysma muscles. The skin and muscle flaps are reflected and the submaxillary gland on either side freed from its bed with the fascia and lymph nodes above it. This necessitates the division of the facial artery and vein. The intervening strip of fascia, with the submental node, is freed from below upward to the symphysis. All vessels are ligated at this time in order to have a clear field not encumbered with instruments, and the submaxillary wound is temporarily packed with gauze.

The lip is then attacked. From a safe point on the lip well outside the cancer the lip is divided and the incision on each side carried outside the chin down to meet the neck incision beneath the chin. The cheek flap is then dissected back to expose the glands, usually three in number, situated about the facial artery where it crosses the ramus of the jaw. These glands and fascia are freed from the jaw toward the chin. The lip and chin is then cut away close to the bone, and the whole tumor, consisting of lip, chin, fascia, submaxillary and submental glands, removed *en masse*.

The closure of the gap left by this wide removal is effected readily by freeing the mucous membrane from the ramus of the jaw, which allows the lip margins to be approximated in the midline. Several silkworm-gut sutures are used in the lip and new formed chin as tension sutures. One end of the strand is passed through rubber tubing, cut in inch lengths, and the ends tied. The rubber tubing will prevent cutting by the suture. Those silkworm-gut strands which pass through the chin are made to include the periosteum over the point of the chin, which prevents the lip from riding upward, which it always has a tendency to do. The mucous membrane of the lip is united by fine catgut sutures, both in the midline and along the margins of the alveolar mucous membrane. This prevents leakage of saliva and also tends to fix the lip in its normal relation to the jaw.

To prevent the formation of the so-called sucker-mouth it is usually necessary to perform some form of cheiloplasty. The best method seems to be that of incising into the cheek from the angle of the mouth. The incision passes only to the mucous membrane of the cheek. The mucous membrane is divided at a higher level so that it can be folded over to form a new vermilion border for the lower lip. To remedy the puckering caused in the angle of the upper lip a triangle is removed in the line of the ala nasi fold after the method

suggested by Burow, and this defect, when sutured, will fall in the above mentioned fold.

The neck wound is then sutured with two rows of sutures, a continuous catgut suture for the platysma and a continuous suture for the skin. Interrupted silkworm tension sutures are sometimes employed. Drainage is usually provided for by a piece of folded rubber dam at the angles of this incision.

Minor Surgical Considerations.

Under this title BIGELOW (*International Journal of Surgery*, March, 1923) discusses his railroad experience and notes that during one year 268 out of 288 patients fell under the classification which is known as minor surgery. He holds that scalp wounds, whether incised, lacerated, or contused, if large enough, should routinely be explored with the finger to detect a possible depression, crack or irregularity of the underlying bone. If symptoms are at all suggestive, a small wound should be freely enlarged with a knife to permit such exploration. All scalp wounds should have the hair shaved freely for at least an inch around them, should be mechanically cleansed by thorough irrigation with whatever solution you please—it need not be antiseptic—and should be gently curetted, or if dirt, gravel, or coal be ground in, scrubbed with a nail-brush. It is rarely necessary to tie bleeding points. The wound should be closed with silkworm-gut, spaced not too closely together. Drainage is not necessary unless the scalp has been extensively stripped up from the skull. No ointments or powders are used, a dry sterile dressing is applied, and whatever bleeding has not been arrested by the sutures is controlled by applying the bandage firmly.

All scalp wounds are contaminated as soon as they are made. If they are seen by the surgeon reasonably soon (under five to seven hours) and treated in accordance with the above routine, they should never become infected. If a surgeon gets a few infections in such wounds he needs to put a little more vigor into the use of his curette or nail-brush and perhaps to lengthen the space between his sutures. One patient, seen four days after his injury and first dressing, had a temperature of 104°, was delirious, and presented a fluctuant tumor over the right parietal region as large as a grapefruit. Under general anesthesia the hair, thickly matted with blood, was cut, shaved away, and a two-inch wound discovered, tightly closed with a continuous silk suture and dusted over with a powder, which had caked and sealed the wound. When the suture was cut the pus spurted two feet, and a hard object fell on the floor which proved to be a piece of coal half the size of a marble. This patient's life was jeopardized, he spent three weeks in the hospital, and was out of service four weeks longer, for an injury which, if properly treated in the first instance, would have entailed a disability of less than a week.

Injuries to the knee-joint are encountered with misgiving, the uncertainty of the prognosis as to the period of disability reflecting the difficulty of exact diagnosis. Cases of traumatic synovitis of the knee-joint, after a careful examination to exclude fracture, are subjected to a paracentesis wherever the effusion is so marked as to cause pain or make a tense globular tumor of the knee. Often several ounces of blood have been withdrawn, the pain is relieved, and the semiflexed knee can be straightened. The knee is then thrown out of commission with a long posterior splint, and a compression bandage is applied to prevent a reaccumulation of the fluid within the joint. The aspiration may in a given case have to be repeated several times. Gentle massage and guarded passive motion are instituted early. Cases of less severity are adequately treated by properly applied adhesive strapping. It is reasonable to assume that the foregoing treatment has materially shortened the period of convalescence, as the absorption of any considerable amount of blood from the

knee-joint must of necessity be a slow process.

Punctured wounds, especially those made by a nail in the bottom of the foot, are routinely treated by a free incision. A quick thrust of a keen knife is hardly more painful than the introduction of a hypodermic needle through the thick skin for cocainization, so that local anesthesia is rarely used, though the ethyl chloride spray helps some with a nervous patient. The wound is allowed to bleed a little, after which a cotton applicator dipped in pure phenol is pushed to its depth. An alcohol dressing is then applied, the wound being drained or not with a strip of rubber dam or gutta-percha as the local condition seems to indicate. It may be objected that this treatment is needlessly severe and unnecessary in ninety-nine cases out of a hundred. The answer is that it is the one-hundredth case we have in mind. Any one who has witnessed the horrible death resulting from lockjaw will have his resolution stiffened by that memory to adopt this routine treatment. In eight years of railroad surgery antitetanic serum was used as a prophylactic only twice. In each instance the patient had crushing injuries received at a public highway railway crossing, where contamination with horse manure was thought to be probable.

Patients with acute sacroiliac strain present themselves frequently. This is a painful, disabling malady, the existence of which, as a distinct clinical entity, is denied by some whose observation has been limited or who have not suffered from it themselves, as the writer has many times. It results usually from a sudden severe straining effort with the body in a position of mechanical disadvantage, or it may come from a quick but slight turn of the body at the waist, as in reaching out for an object. The patient is seized suddenly with severe, even agonizing pain in the small of the back which is aggravated by the slightest movement; and he is rendered immediately helpless so far as working is concerned. He holds himself stiffly, with the body bent slightly to one or the other side at the pelvis. The diagnosis may be suspected by the attitude and gait of the patient, the care with which he eases his body on to a chair, and the way he helps himself to an upright position by pushing with his arms. It will be confirmed by the quick and voluntary expression of relief that follows splinting of the sacroiliac joints by properly applied adhesive strapping. With the patient lying on his face, or standing with his feet braced apart and one hand extended against the wall to resist pressure made by the surgeon, strips of adhesive 3 inches in width are caught on one side of the pelvis and drawn tightly across to the other side, passing across the back from as low as may be over the sacrum to above the crest of the ilia, each successive strip overlapping by one-half its width the one below.

Under this simple but effective treatment patients sent to the hospital in an ambulance with a lay diagnosis of "broken back" have been returned to service in two weeks, though often patients whose disability is not so pronounced at first require a longer period for convalescence to be complete.

Contused and lacerated wounds of the fingers and toes, hands, and feet constitute the largest single group of cases in the list. Their management, if it be successful from the standpoint of prompt convalescence, a clean wound and no infection, calls for the exercise of sound judgment and good technique. All such wounds are contaminated in the making; all of them contain devitalized tissue on which the contaminating organisms thrive. After an incubation period of from four to eight hours the organisms begin to grow and the contaminated wound has become an infected wound. To prevent infection or to combat it if once established we rely on disinfection, drainage, and support or rest, obtained through the medium of a splint. To one who still maintains a strong faith in the vis medicatrix naturæ, drainage and support are more important than disinfection. Conservation and encouragement of the

damaged circulation is the fundamental consideration. Bad judgment is here conspicuously displayed by close suturing to secure nicely coapted wound margins, the sure effect of which is to interfere with the already damaged circulation, lock up the inevitable secretions, and vitiate entirely whatever good may have been accomplished by the preceding disinfection.

A safe rule is to decide on how many sutures to apply and then put in half that number, or better still, in many instances, to apply no sutures at all. Hardly less iniquitous is the futile obeisance to drainage made by inserting a gauze wick, in which the secretions dry on the surface to make of our wick a tight-fitting cork through which or around which there is no escape.

A New Operation for the Correction of Retroflexion of the Uterus.

KEEFE *(Boston Medical and Surgical Journal,* March 8, 1923) thus describes his method of operating for the correction of retroflexion of the uterus:

The patient is placed in the Trendelenburg position at a greater angle than is usual. A modified Pfannenstiel, slightly curved, transverse incision is made through the skin and fat, down to the fascia covering the recti muscles. This incision, with its convevity toward the pubes, extends from a point one inch to the inner side of the anterior superior spine of the ilium to a like point on the opposite side, on a line with the upper border of the pubic hair. The scar resulting is found to be in the fold of the lower abdomen, just above the pubes, and on account of the location of the wound it is scarcely noticeable. The flaps are dissected upward and downward for a distance of about five inches. A second vertical incision is made near the median line, at right angles to the original incision, through fascia, rectus muscle, and peritoneum. A careful examination is now made of the abdominal contents, and any pathological condition found is corrected. When the uterus is replaced in the normal anteverted position, the round ligaments are observed to be lax and of too great length to be of material assistance in holding the uterus in the new, yet normal, position.

The slack in the round ligaments is now taken up by the following procedures: An incision two inches in length is made through the peritoneum covering the uterus and round ligament, the center of which incision lies over the insertion of the round ligament into the uterus. The edges of peritoneum along the incision are retracted and the uterine portion of the incision deepened sufficiently to receive the round ligament about to be embedded in it. The round ligament, freed of its overlying peritoneal covering, is now grasped with forceps and drawn taut, in the direction of the uterus, thus taking up the slack. The loop of round ligament resulting from this procedure is fixed in the slit in the wall of the uterus by three or four chromic gut sutures. The peritoneum is then drawn over the ligament and united with a continuous, plain catgut suture.

Obstruction of the Ureter by Abnormal Renal Blood-vessels.

ROWLANDS *(International Journal of Surgery,* March, 1923) observes that obstruction of the flow of urine through the ureter by abnormal blood-vessels will be found not uncommon if the pelvis and ureter be examined as an ordinary routine and an essential part of every kidney operation.

The main renal vessels and their branches pass in front of the renal pelvis to reach the hilum of the kidney, but one of the four or five branches of the renal artery or vein usually passes behind the pelvis, as a rule at too high a level to obstruct the narrow outlet into the ureter. Occasionally, however, an abnormal renal vessel crosses the origin of the ureter on its way to the lower pole of the kidney; this is usually a posterior branch of the renal artery. Sometimes a similar tributary of the renal vein, and sometimes a vein and an artery, run to-

gether. Very rarely an additional renal artery runs from the aorta to the lower end of the kidney. As a rule, but not invariably, the offending vessel lies behind and hitches up the origin of the ureter. The abnormality appears to be about equally common in the two kidneys, and in males and females. In some cases the abnormal vessel crosses the ureter without obstructing it, but if the kidney is unusually movable some obstruction is likely to occur when the trunk is in the vertical position. This leads to gradual dilatation of the pelvis. Any dilatation and pouching of the pelvis is likely to increase the tension upon the artery and, therefore, to increase the obstruction. In the course of time, as the pelvis becomes more and more distended and as the heavier kidney descends more, the tense blood-vessel exerts more and more pressure on the ureter, inflaming it, and at last causing a real stricture at the site of constriction.

A careful study of these cases leads to several important conclusions:

1. The long duration of unnecessary suffering, the large number of medical men consulted before the correct diagnosis is made and the only rational treatment by operation is adopted show that we are not sufficiently aware of the possibility and curability of this interesting condition.

2. Cystoscopy after the injection of indigocarmine is very valuable in establishing the diagnosis and in ascertaining the functional capacity of the other kidney.

3. It is very important at all operations upon the kidney and upper ureter to look out for abnormal vessels kinking the ureter, so that a complete cure can be made at one operation.

4. The difficulties of secondary operations owing to adhesions and secondary changes in the kidney and ureter point to the value of finding and dividing the abnormal vessel at the first operation. In six out of twelve of the author's cases a secondary stricture of the ureter, due to long-continued pressure of the obstructing blood-vessel, had to be overcome by a plastic operation, and in one a secondary nephrectomy became necessary. Earlier diagnosis and more thorough operations should make these complications very rare.

5. Once the obstruction is thoroughly overcome the recoverability of the kidney is remarkable. Primary nephrectomy, even if the other kidney is known to be good, should therefore be very rarely performed. It is far wiser to give the damaged kidney a chance of recovery unless it is in a hopeless and dangerous condition.

6. When a secondary stricture of the ureter has developed, a plastic operation or anastomosis with a water-tight junction will probably save the kidney, even in the presence of pyonephrosis.

Some Unusual Complications of Nitrous Oxide-oxygen Anesthesia.

CAINE (*American Journal of Surgery*, April, 1923) reports the case of a woman thirty-nine years old, subject to operation for gall-bladder somewhat unduly prolonged because the abdomen had to be opened after almost complete closure to reinsert a drainage tube which had been pulled out with the final sponging. To accomplish the complete relaxation needful for the supplemental operation Caine saturated his patient. The respirations slowed down. He watched the pupils during this period of saturation; they remained contracted although the respiration stopped. He then turned the dial to pure oxygen and endeavored to find the temporal pulse, but could not feel it. He immediately forcibly inflated the lungs with oxygen, and at this stage the pupils dilated. Several rhythmical inflations of the lungs did not restore color or heart-beat, so he advised the surgeon to massage the heart through the diaphragm; which he did, reporting that no movement of the heart could be felt. After about half a minute of this, during which time the lungs were rhythmically distended with oxygen, the heart responded, and was soon beating as though nothing had happened. The pupils contracted and respirations returned. There was a total stoppage of the heart's action of from a minute to a

minute and a half. Several minutes of respiring pure oxygen did not, however, restore consciousness, nor did this return until some hours later. The patient died the next morning.

The second case was also one operated on for gall-bladder pathology. Owing to constant grunting and intestines bobbing up, this patient was saturated. Respiration stopped; the pulse was good and pupils contracted. Caine waited for only about a moment, and was about to turn on emergency oxygen for forced inflation of lungs when the pulse stopped and pupils dilated. Oxygen inflation produced no response. The surgeon quickly opened the abdominal wound and massaged the heart through the diaphragm. After a few strokes its action was renewed, respirations and color were restored, and the pupils contracted. This patient recovered surgically, but never mentally, and died a few months after operation.

The case of a fat mulatto, aged thirty-seven, is reported, operated on for fibroid uterus. During the course of the operation the heart stopped, was massaged through the diaphragm for about two minutes, and its action was restored. Artificial respiration was kept up with oxygen for about five minutes before there was return to normal action. There was complete paralysis a few hours later. The patient was blind; the blindness continued for six years, and for three years she was unable to speak so that she could be understood.

In another case operated on because of appendicitis the heart stopped. The pupils did not dilate for several seconds after there was no sign of heartbeat. The heart did not respond to massage.

The author concludes his paper as follows:

If the heart stops because of overdose of nitrous oxide and underdose of oxygen, and remains inactive for a minute in the human being, the chances of recovery to normal are not good.

Restoration of heart's action and respiration does not mean that the patient is all right, but there are likely to be degenerative changes in the brain that are irreparable.

The human brain cannot stand the suspension of circulation and return to normal as can the brain of the dog.

The pupils are not a safe guide to saturation, as there are too many exceptions to the rule of dilatation, and these exceptions, when the pupils are depended upon, are too important.

The respiration is a much safer guide than the pupil. When respirations slow to almost stopping point, even if deep, it is time to add more oxygen if one is saturating. When the eyeballs turn inward and become fixed, saturation is complete or almost so, independent of the pupil, and oxygen should be added at once. If respirations stop during saturation, without any delay at all inflate lungs with oxygen, or with a high percentage of gas and oxygen (25 to 50 per cent oxygen).

Nitrous oxide and oxygen anesthesia is safe as long as sufficient oxygen is given, but when the oxygen is discontinued for the purpose of saturation in order to secure relaxation, the greatest attention is demanded and the respiration should never be allowed to fail.

The New Midwifery.

BALLANTYNE *(British Medical Journal,* April 14, 1923) notes that the obstetrician in the past went to his midwifery case determined to prevent, so far as in him lay, difficulty and danger to mother and child; and before he said farewell to his two patients he endeavored to repair, as far as he could, any damage done to either or both of them. He was practicing preventive and reparative obstetrics. There was, however, one great point of difference in the "old" as compared with the "new" midwifery. In the "old" prevention and repair were attempted practically within the time limits of the labor itself, whereas in the "new" prevention begins away back in the early months of pregnancy, if not earlier still, and reparative measures pursue the patient without regard to any time limit

and solely with respect to complete restoration of the damaged parts to their original structural and functional efficacy. By preventive measures founded upon antenatal supervision and treatment the obstetrician of the present, and still more of the future, is and will be able to gain a less dramatic, a less spectacular, but an infinitely more comfortable and less exacting victory in labor; and by a careful and continued "follow-up" of his patients (mother and infant) he will be enabled to return them to the ranks, so to say, of the general population intact and fit for what the future may demand of them.

In two directions the changed outlook upon midwifery has been revealing itself: it has thrown new responsibilities upon maternity hospitals, upon medical practitioners, and upon obstetric teachers; and it has demonstrated that great possibilities of life-saving (both maternal and fetal) and of disease- and disability-preventing come with its adoption. It brings new obstetric responsibilities, but it also promises new obstetric triumphs. The promises, further, have been already, in some measure and in certain places, redeemed; successes have been realized. As soon as it is demonstrated that the maternity hospital is responsible, not only for the welfare of women in the hours of labor and in the days of the puerperium, but also in the months of pregnancy and in the time that immediately follows their departure from the institution, just so soon is it incumbent upon the hospital staff and the board of directors to provide the care required even if it entail a remodeling of the whole work and a marked expansion of the premises.

Stated first in terms of the maternity hospital, the new provisions involve the setting up of the antenatal clinic in the hospital, with smaller and more distinctively preventive antenatal clinics in the districts from which the patients of the institution come, and along with the staffing of these with doctors, midwives, and nurses. They involve the establishment of the prematernity or antenatal ward or wards in the hospital, for the treatment of expectant mothers who are so ill as to require such accommodation, or who, in view of special interference in labor, need to be under supervision of a daily kind. They mean the development of the venereal diseases clinic for infected expectant mothers and of the venereal disease ward or wards for the treatment of the same women and their infants both from the obstetric and the medical standpoints. The maternity hospital must accept responsibility for these patients and for this specialized work; but having done so it will soon discover how full of life-saving and health-restoring possibilities it is. It may yet be discovered that it will be profitable to set agoing a dental clinic also for the expectants. Even more pressing is the establishment of a postnatal department where the "follow-up" work can be carried on. This will involve the giving of mothercraft instruction to women, especially to primiparous women, before they leave the hospital with their babies; the setting up of a neonatal or prematurity ward for the delicate infants; the provision of reconstructive beds for the repair of all injuries or weakenings of the generative organs in women who have been confined in the hospital—a small gynecological department in fact; and the carrying on of postnatal clinics for mothers and babies who have left the hospital both in the hospital and also in the districts from which these patients come.

The pregnant, the parturient, and the puerperal woman and her infant have passed under the egis of the public health authorities just as surely as the fever patient, the tuberculosis patient, the insane, and the school child.

The general practitioner cannot, any more than the maternity hospital, afford to stand aside from new obstetric responsibilities; he, like it, must adapt himself to new conditions.

In order fully to incorporate the new midwifery into general practice it would seem that certain changes must be effected.

In the first place, the new outlook must be recognized in medical education, both undergraduate and postgraduate.

In the second place, general practitioners who include midwifery in their daily work must extend the sphere of their responsibility to their obstetric patients. They must regard themselves as in charge from the earliest weeks of the gestation—from the time, in fact, when the expectant mother puts herself in their keeping. They will, further, encourage their patients to come as soon as the first monthly period has been passed; and they will find that such a request will not be disregarded so often as it would have been a decade ago, for there is a better appreciation in the public mind of the value of preventive measures in the hygiene of pregnancy and labor.

There will remain, however, the difficulty of adequate remuneration, a difficulty which can hardly be hoped to disappear entirely in the present generation. In time, as the general practitioner is able to offer greater security from suffering and danger in pregnancy, it will become customary to reward his or her service by fees, and so to break down the habitual attitude of mind which regards the obstetric remuneration as given for attendance in labor and the puerperium. Similarly it will be recognized that the doctor who does reparative gynecology some weeks after the confinement deserves an adequate reward for so doing. In any case in which the patient is unable to give more than the ordinary fee for attendance at labor and in the lying-in time the doctor may and ought to make use of such antenatal clinics and mothercraft classes as may be available in the district.

In such ways as have been indicated the general practitioner may come into the new midwifery; he will find it in undergraduate and postgraduate teaching, and he will be able to graft it into his daily work and make use of the various public health facilities. But in the third place he may make it an important part of his practice, specializing in it to some extent. To do this effectively he must begin at the beginning.

He must throw himself with special vigor into the midwifery part of his training, attending antenatal clinics, even if they be not compulsory for graduation purposes; and he must familiarize himself with the public health aspects of the matter, visiting infant centers, seeing mothercraft work, learning the office work, and generally getting a grasp of the links which bind obstetrics and hygiene together.

There can be as yet no limit set to the possible therapeutic triumphs of an antenatal department with antenatal beds and a competent and devoted staff. When such departments have been widely provided the general practitioner will probably find that it will be for his pregnant patient's benefit and for his own ease of mind to send his serious cases of gestation complications into them, just as he sends his fever cases into hospital and his insanity cases into an asylum.

A great gain in the new midwifery will be, and already is, the increase in the number of normal labors due to antenatal work, and of normal pregnancies due to the postnatal work. Both these results will follow, and, after all, postnatal supervision and treatment is simply the antenatal care of the succeeding pregnancy and confinement. The principle of prevention of danger and difficulty which is beginning to permeate obstetric practice is already calling forth a sort of humorous protest from the staffs of hospitals, to the effect that the antenatal department is seriously lessening the total amount of operating at labor. Certainly the timeous application of measures decided upon after a reasoned scrutiny of all the conditions discovered during pregnancy will lead to a restriction of some varieties of operative interference and an expansion of others; craniotomy, for instance, will give place to Cæsarean section on induction of labor.

The restriction of abnormal labors will make wholly for the welfare of both mother and child. Many instances might be given of its mode of production; a few must suffice. As every one knows, pelvic presentations, especially in primiparæ, are a source of danger to the infant; if they do not greatly increase the mother's risks they do, by their tendency to cause stillbirths,

disappoint her wishes, depress her spirits, and retard her recovery. In all first labors and in most later ones the discovery of a breech presentation means in the new midwifery the performance of cephalic version by external manipulations, aided when necessary by the use of an anesthetic. Similarly tranverse lies and face presentations should be turned as soon as they are detected at the antenatal clinic. By the application of towel pads, as suggested by R. C. Buist, right and left occipitoposterior positions of the vertex may be almost certainly converted into the corresponding anterior positions, with immense relief to patient and doctor when labor comes. This is no small advantage to the general practitioner.

Obesity: Observations of 1000 Cases.

PREBLE (*Boston Medical and Surgical Journal,* April 26, 1923) in diagnosing obesity uses life insurance tables of normal weights. He classes as obese any individual exhibiting ten pounds or more overweight. He has recorded comparatively few cases before the thirtieth year and after the sixtieth. He notes that blood-pressure is usually high, and falls with decreasing weight. Of his 1000 cases 432 gave evidence of organic heart trouble and 230 of functional disease; 463 cases gave evidence of kidney impairment; 53 cases of 700 showed sugar in the urine.

The basal metabolism was within normal limits. As for mortality statistics, studies based on more than 250,000 overweight people showed that up to 10 pounds there is no increase in mortality, but above that figure the mortality rises steadily and alarmingly. It is worthy of note that there is no marked increase in morta ity up to the age of twenty-five even in the very obese. At the age of twenty-five the mortality rises from 15 pounds overweight and upwards, and at and beyond the age of forty the rise in rate is rapid, increasing with the rise in overweight. There is in the figures given a decrease in mortality after the age of fifty, probably due to the fact that this study was made on the insured and that after fifty the companies are loath to insure people who exhibit overweight, only exceptionally good risks being accepted.

Since these figures are deduced from data based on policy-holders, it is fair to assume that the mortality of the obese would be considerably higher than is here shown.

As to why fat people die sooner than those of normal weight, the Connecticut Mutual Life Insurance Company has shown that regulation of the diet is the important thing. Only in rare cases is glandular or other drug therapy indicated.

The cause of obesity may be simply too much food, but it is more apt to be an excess of carbohydrate or fat, or both, in the diet.

The diet and daily habits as regards work, exercise, sleep, etc., of the individual patient must be carefully scrutinized, and excesses corrected. Care should be taken that the patient gets enough proteid, otherwise weakness will result. A rather high proteid diet—90 to 110 grammes—is prescribed except for nephritis, in which class the amount is regulated according to kidney function. Careful follow-up, with frequent urinalysis, has never revealed any untoward renal sequelæ resulting from treatment.

Patients should be seen rather frequently in order to keep them in the straight and narrow path, and to be sure they get a well-balanced diet. Success in reducing weight is obtained in 100 per cent of the cases that coöperate with the physician.

Results of Treatment in 120 Consecutive Cases of Hyperthyroidism.

FREUND *(New York Medical Journal and Medical Record,* April 24, 1923) after a discussion of the subject concludes his paper as follows:

1. It has been the object of this paper to differentiate the three groups of hyperthyroidism, the functional, the adenomatous, and the hyperplastic.

2. They can be divided into these types

clinically without difficulty if one obtains a careful history of the onset of goitre, the beginning of symptoms, examining the thyroid critically and noting the eye signs and cardiovascular system.

3. Transition forms are not infrequent and should be definitely considered. It must be borne in mind that there are cases in which there are outspoken signs and symptoms of hyperthyroidism, without glandular changes, or at the most colloid goitres without adenoma or hyperplasia. These are due to temporary functional hypersecretion.

4. The medical treatment of the hyperthyroid cases with *x*-ray controlled by metabolism studies, proper rest and the use of quinine is a satisfactory manner of managing a great proportion of cases of hyperthyroidism.

5. The results are apparently permanent, and where slight reductions have a tendency to occur, the institution of supplementary treatment suffices to arrest the progress of the disease.

Clinical and Pathological Studies of Tonsils Subjected to X-ray.

BORDEN *(Boston Medical and Surgical Journal,* April 6, 1923) as the result of his experience comes to the following conclusion:

Fourteen cases of diseased tonsils *x*-rayed from one to four times failed to show any clinical or pathological changes as a result of the radiation, except as follows:

During the times the radiations were being given many of the tonsils seemed to be smaller and more normal in appearance, but when subsequently removed by dissection no real change in size appeared to have taken place.

After radiation many of the tonsils appeared to be normal in size and color, but at the time of operation a number of them were found to be filled with pus or cheesy débris.

As a method of reducing bleeding and assisting dissection at the time of operation, radiation is useful.

By diminishing oversecretion from the mucous surfaces of the throat it decidedly decreased the possibility of postoperative pneumonia or lung abscess following throat operations.

In cases wherein diseased tonsils may be justly suspected of producing secondary infections in the joints, heart, kidney, or other important organs, *x*-ray radiations are inadequate.

Cholecytitis and Its Complications.

PETERMAN *(Surgery, Gynecology and Obstetrics,* April, 1923) contributes a study on this subject worthy of high commendation because of the clear way in which he has set forth in small space a work exhibiting scholarly research, laboratory vision, and the ability to interpret clinical material. The first of the paper is devoted to a review of the literature on experimental cholecystitis, which shows that:

1. Intravenous injection of organisms, if in sufficient amount, is always followed by the appearance of these organisms in the bile. The organisms are probably carried to the liver in the blood stream, excreted in the bile, and carried through this medium into the gall-bladder. Also, however, organisms are carried at the same time, among other places, into the wall of the gall-bladder by the blood stream and lymphatics.

2. The intravenous injection of virulent organisms in sufficient amount produces a cholecystitis in a high percentage of cases.

3. The organisms, after intravenous injection, may be demonstrated in the bile one-half to two minutes after injection, and may be found in the gall-bladder after the blood has become sterile.

4. Simple injection of organisms, even in large amounts, into the lumen of a normal gall-bladder does not usually produce a cholecystitis.

5. Injection of virulent organisms into the lumen of a gall-bladder in sufficient amounts, after ligation of the cystic duct and vessels, regularly produces a cholecystitis.

6. Although cholecystitis may be due to a hematogenous infection, it is not infrequently lymphogenous in origin.

7. Cholecystitis is constantly accompanied by a hepatitis. The character of the lesion in the liver is determined, to a certain extent, by the origin and course of the disease in the gall-bladder.

Accepting these conclusions as reasonably established facts, there still remain numerous problems for further consideration. Among those problems the following were considered of sufficient importance to warrant investigation: (1) The passage of organisms into the bile of the gall-bladder after injections into the portal and systemic veins, as influenced by ligation of the cystic duct and vessels; (2) the occurrence of organisms within the wall of the gall-bladder at a distance from the mucosa soon after portal-vein injections, after preventing their descent in the bile by ligation of the cystic duct and vessels; (3) a study of the complications of cholecystitis produced experimentally.

The second part of the paper bears on experimentation directly concerned with the establishment of a constant relationship between cholecystitis and hepatitis. The third part deals with cholecystitis in its relation to appendicitis and peptic ulcer. The fourth part reviews the relationship of cholecystitis to pancreatitis, transmission of infection being regarded as occurring through the lymphatics. In the fifth part a survey of clinical cases is given. The sixth part is made up of a general discussion to the following effect:

From a review of the literature and also from the experiments done in the laboratory, it is evident that cholecystitis and biliary-tract infections may be produced in a variety of ways. Any experimental method by which virulent organisms are carried through the blood stream directly to the gall-bladder is followed in the majority of cases by the development of a cholecystitis. Experiments reported in this article, and also some previously reported in conjunction with Priest and Graham, serve to emphasize the importance of the lymphatic route in the pathogenesis not only of cholecystitis, but also of its complications, such as pancreatitis, hepatitis, and inflammation of the common duct. Although the possibility of the lymphatic rôle in the pathogenesis of pancreatitis secondary to cholecystitis has been mentioned before, particularly by Maugeret, it is thought that the experiments reported are the first which have brought direct evidence indicating that cholecystitis is not infrequently lymphogenous in origin. The evidence, both experimental and clinical, seems to suggest strongly that perhaps in the majority of cases cholecystitis is produced secondarily to a hepatitis by lymphatic extension.

This conclusion is based on a number of facts: (1) The well-recognized association of lesions of the portal system (appendicitis, duodenal ulcer, etc.) with cholecystitis suggests that organisms are carried through the portal vein to the liver from these lesions, and that a hepatitis occurs before the cholecystitis because there is no direct pathway between the appendix, for example, and the gall-bladder. (2) By direct injection of organisms into a radicle of the portal vein, as, for example, the appendix vein, it is possible to produce cholecystitis. (3) There is no direct route by the blood stream by which organisms can be carried to the gall-bladder from the liver, since the cystic artery and the other smaller arteries which are the only source of arterial blood to the gall-bladder are branches of the hepatic. Organisms, therefore, to gain access to the gall-bladder from the liver via the blood stream, would have to travel the circuit of the whole systemic circulation from the liver back through the celiac axis and the hepatic artery. This would seem an unlikely occurrence in the majority of instances. Only two possibilties, therefore, remain: one is that the infection spreads from the liver to the gall-bladder through the abundant lymphatic connections, and the other is that organisms pass down in the bile into the gall-bladder.

There are several reasons, however, for thinking that, contrary to a common belief,

descending infection of the gall-bladder from the bile is comparatively rare. One of these reasons is that it is almost impossible to produce experimentally a cholecystitis by merely putting bacteria into the lumen of the gall-bladder unless at the same time one injures the wall severely either by direct means or by interference with the circulation; or unless the cystic duct is obstructed so that the gall-bladder cannot empty itself. Another reason is that, also, contrary to the usual belief in human cases the mucosa is usually less involved, as shown microscopically, than is the rest of the wall. This could hardly be expected to be the case if cholecystitis commonly occurred as the result of contact infection of the mucosa of the gall-bladder from bacteria present in the bile. The unlikelihood, therefore, of the development of cholecystitis merely from the presence of organisms within the bile leaves the lymphatic route as the one which is perhaps most probable in many, if not in the majority, of cases. Such a lymphatic infection would begin in the deeper layers of the wall of the gall-bladder rather than in the mucosa; and apparently this hypothesis coincides with the pathology found in cases of early gall-bladder infections in the human. The emphasis so commonly placed on the appearance and changes in the mucosa of the gall-bladder would seem, therefore, to be misdirected.

Fracture of the Head and Neck of the Radius.

GROSSMAN *(New York Medical Journal and Medical Record,* April 18, 1923) notes that fractures of the head and neck of radius occur more often than was formerly believed. The chief sign of this type of fracture is a so-called wincing tenderness, elicited by direct pressure upon the head or neck of the radius. Pain may also be produced on pronating and supinating the forearm. There may be swelling in the region of the radiohumeral joint, due to effusion from a traumatic synovitis.

An interesting condition, especially in children, which should be remembered when making a differential diagnosis of the various elbow injuries, is that known as traumatic palsy of the forearm. It is one in which a partial dislocation of the head of the radius results from a trauma to the upper extremity. The history of the nature of the trauma and the subsequent picture are characteristic. The patient has been dragged by the wrists or raised by the wrists, following which there is disability, and pain when manipulation of the affected extremity is attempted. The limb hangs limply at the side as if it were a flaccid paralysis. Hence its name. Slight swelling at the elbow may be present. Ecchymosis, false mobility and deformity are lacking. Passive flexion and extension of the elbow are free and painless. Pronation and supination of the forearm are limited and painful. Upon extreme supination a clicking sound is heard, at which time the head of the radius slips back into its normal position. Immediately thereafter there is resumption of the normal function of the limb. This condition is by no means uncommon and should always be remembered when diagnosis of elbow injuries is made.

The treatment of fracture of the head and neck of the radius is the same as that used in the treatment of intra-articular fractures in general. One must remember that the head of the radius lies wholly within the joint, is covered with synovial membrane and is bathed with synovial fluid. Hence fracture is usually accompanied by traumatic synovitis and some hemorrhage within the joint. In view of these facts the best treatment is immobilization with early baking. Movements should be delayed until the swelling in the radiohumeral joint has subsided. In selecting an immobilizing agent, one must remember the head of the radius enters into the formation of two joints, the radiohumeral and the radioulnar, and the fixation agent must control both these joints. A very simple and efficient fixation agent is one which maintains the elbow in acute flexion. The bare forearm is fully flexed so that the hand

rests on the opposite shoulder, and the elbow is carried well forward on the chest. The position is fixed by a strip of adhesive plaster encircling the arm and forearm just above the elbow joint. The forearm is now bandaged to the arm by figure-of-eight turns of a flannel bandage. Before applying this dressing the arm should be dried and powdered and boric acid cotton placed in the elbow crease and axilla to absorb the perspiration and keep the parts dry. The limb is retained in position by a sling around the neck.

Immobilization should be continued until the swelling in the radiohumeral joint disappears. Baking should be begun immediately and continued daily throughout the treatment. Passive movements followed shortly by active movements should be begun as soon as the fluid in the joint disappears.

Reviews

1922 Collected Papers of the Mayo Clinic, Rochester, Minn. Illustrated. W. B. Saunders Company, Philadelphia and London, 1923. Cloth, $13.00 net.

Among the clinics of the world that of the Mayos stands easily first, not only from the wealth and variety of its material, and from the supreme skill with which this material is handled, but because it is the graduate school for the surgeons of all civilized countries. To it they flock, from it they take a clearer concept of efficient technique, of personal responsibility to each and every patient; a stronger aversion to the irrational fads of the day.

By the pilgrims to the Font of Surgical Knowledge these collected papers will be received with little less enthusiasm than by those surgeons who have not had an opportunity of attending the Mayo Clinic and becoming personally inspired by the spirit that prevails therein.

This is the most important surgical publication of the year, as have been its predecessors for many years—sound, clear, systematized, covering widely divergent fields and covering them well. It constitutes a series of publications as indispensable to the surgeon as is, for instance, Osler's System of Medicine to the physician.

One who neither reads and reads carefully nor owns these books is badly handicapped in his professional career.

The subjects covered are grouped under the Alimentary Tract, the Urogenital Organs, the Ductless Glands, Blood and Circulatory Organs, Head, Trunk and Extremities, Brain, Spinal Cord and Nerves, Organic and Physiological Chemistry and General. There is a small section on Technique, and one giving the Present Status of Renal Functional Tests and Transsacral Nerve Block Anesthesia in Surgery of the Pelvic Floor and Viscera.

Among the contributors we find Adson, Austen, Balfour, Braasch, Stokes, Mann, Hedblon, Rosenow, Judd, MacCarty, the two Mayos, Rowntree, Wilson, and many others honored by the profession.

Nouveau Traité de Médecine. Fascicule XIII. Appareil Digestif Bouche, Pharynx, Oesophage, Estomac. L. Babonneix et H. Darré: Affections de la bouche, Affections du pharynx. Bensaude et L. Rivet: Affections de l'oesophage. Lenoir et E. Agasse-Lafont: Affections de l'estomac. Masson et cie., Editeurs. Paris, 1923.

The thirteenth fasciculus of the Nouveau Traité de Médecine comprises the diseases of the digestive tract as far as and including the stomach. The affections of the mouth and pharynx are described by L. Babonneix et H. Darré; those of the esophagus by Bensaude et L. Rivet; and those of the stomach by P. Lenoir et E. Agasse-Lafont. All the articles are exhaustive, the arrangement and classification lucid, the illustrations helpful. References to the literature are abundant, but are chiefly to French literature. Under syphilis

of the stomach and under the subject of the relation of cancer to ulcer—ulcerocancer as it is called by the authors—no mention is made of the many publications of the Mayo clinic. Nevertheless the work is of the highest order and will long stand unrivaled. D. R.

Correspondence

How Fast Does a Tapeworm Grow?

To the Editors of the THERAPEUTIC GAZETTE.

The following notes are taken from the margin of my "Hare's Practice," written at the time:

"Aurora, Mexico, March 7, 1909.

"Mr. D———, after taking Filix Mas, passed tapeworm—not seen by me—but five segments, brought for examination, showed that it must have separated very near the head, though the head was not found. May 24th. Upon reappearance of segments was again given Filix Mas and passed 20 feet of measured worm. Again no head; but very narrow segments. On the supposition that it was the same worm, it had grown 20 feet in 2½ months; 8 feet per month or 3 inches per day, not counting the segments thrown off, before the last treatment. From the size of the segments, it was probably *'Bothriocephalus latus'*."

F. CAWTHORN, A.M., M.D.

Superior, Arizona.

Notes and Queries

A World at War with Venereal Disease.

In *The World's Health,* published in July, 1923, at Geneva, by the League of the Red Cross, we find an abstract from an address delivered by Professor Bayet of Brussels on February 24th last and published at length in French in pamphlet form by the *Union internationale contre le Péril vénérien,* 7, rue Quentin-Bauchart, Paris.

Only a few years ago it would have been impossible to speak publicly of venereal disease in general and of syphilis in particular. The conspiracy of silence which then obtained has given place before the conviction that to fight this evil effectively we must understand it. No one can estimate the number of those who have in the meanwhile suffered as victims of that former wretched hypocrisy born of false pride and punctilio.

The pharisaical attitude which despises the syphilitic as afflicted with a "shameful" disease might well be an object of mirth, were not its results so tragic. How much more admirable is the viewpoint of Professor Fournier when he says: "Let him that is without sin be the first to throw and I am sure my syphilitics will not be exposed

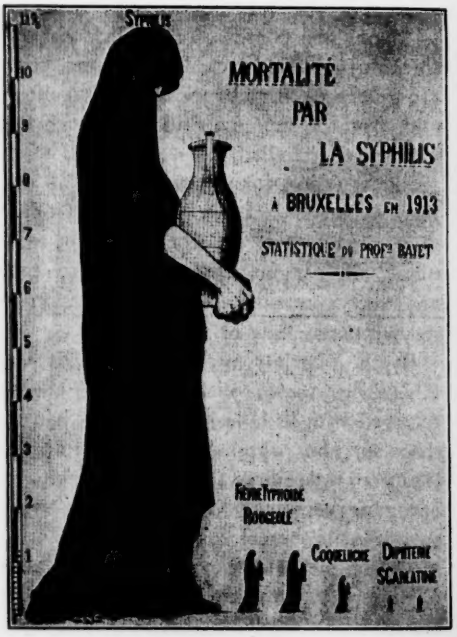

FIG. 1.—Mortality from syphilis in Brussels in 1913 compared with that from typhoid fever, measles, whooping cough, diphtheria and scarlet fever.

to a heavy shower of stones." And it is to be remarked that in so speaking Fournier had in mind only acquired syphilis. Many, even most of its victims, can no more be blamed for having caught the disease than can a child for catching measles or scarlet fever.